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ESSPIN Composite Survey 2

Lagos State report

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Acknowledgements

Executive summary

This report presents the findings for Lagos State from the first and second rounds of the Education Sector Support Programme in Nigeria (ESSPIN) Composite Survey (CS1 and CS2), conducted in 2012 and 2014, respectively. The survey covered a wide range of indicators at the teacher, headteacher, school-based management committee (SBMC), and pupil levels, in an attempt to understand how schools in ESSPIN states are changing over time and whether schools which receive ESSPIN interventions are working better than those which do not.

In Lagos the ESSPIN programme began with a pilot (Phase 1) in 2009/10 and was gradually rolled out so that by 2012/13 all schools in the state were benefiting. There are no schools left in the state which could act as 'control' or non-intervention schools, by comparison with which we would be able to measure the impact of ESSPIN. Instead, we compare schools according to the amount of intervention they have had, distinguishing three groups: those that began the programme in 2009/10 and had the most intervention, those that began in 2011/12, and those that began in 2012/13 and so had the least intervention. We also compare changes over time for the state as a whole, and separately for schools which had the most intervention compared to those which had relatively little during the relevant time period.

Enrolment in Lagos public schools has increased slightly since 2009, while the number of teachers appears to have declined, resulting in substantial increases in pupil–teacher ratios (PTR). The proportion of schools with more than 50 pupils per teacher rose from around 9% in 2009 to 21% in 2013. This may have affected the ability of schools to deliver good learning outcomes for all enrolled children, especially if the profile of learners is changing at the same time, and should be kept in mind in interpreting the results in this report.

The main findings are as follows:

Teacher competence: Teachers who have received ESSPIN training are more competent than those who have not, and teachers who have received more ESSPIN training tend (as a group) to have improved more rapidly over the two years. On the whole, however, teachers in schools that joined ESSPIN more recently have improved more rapidly than those in schools that joined ESSPIN earlier, when we consider both teachers who individually received training and other teachers. Overall, improvements among trained teachers and in the schools that joined ESSPIN recently appear to have been balanced out by a slight worsening among other teachers. There has been no change in teacher competence in the state as a whole. Teachers improved at using teaching aids and in the extent to which they encouraged children's participation through praise during lessons, but worsened at assigning individual or group tasks during the lesson. In tests of their content knowledge, teachers in Lagos were able to answer correctly over half of grade 5 level English questions, and 70% of grade 5 level mathematics questions.

Headteacher effectiveness: In 2012, only 8% of headteachers in Lagos met our standard for headteacher effectiveness, but by 2014, two-thirds of them did. This is likely to reflect the roll-out of ESSPIN support across the state. Schools that have had ESSPIN intervention for longer appeared to have more effective headteachers, although the difference was not statistically significant. Headteachers in both recent and earlier phases of ESSPIN improved by roughly the same degree between 2012 and 2014.

School development planning: Between CS1 and CS2 there was an improvement in school development planning, with 20% of schools meeting the standard in CS2 compared with 9% two years earlier. Some 89% of schools had carried out a self-evaluation process, and 79% could show our data collectors a current school development plan (SDP) document, representing large

increases since 2012. Between 2012 and 2014, schools that entered the programme more recently (2012/13) improved particularly quickly, catching up with the schools that entered earlier from a much lower baseline; in 2014 there were no significant differences between the different ESSPIN phases.

School inclusiveness: School inclusiveness has improved in Lagos State: the proportion of schools meeting the overall standard increased from 24% to 46%. Schools that had been supported for longer appeared to be more inclusive: 93% of the schools in the first phase of ESSPIN either partially or fully met the inclusiveness standard, compared to 71% of schools in the most recent phase. Schools which have had ESSPIN support for longer improved at roughly the same pace as those that joined the programme more recently.

SBMC functionality and inclusiveness: In the schools in Lagos there was a significant improvement in all of the criteria for SBMC functionality between 2012 and 2014, and the proportion of schools' SBMCs meeting the overall standard for functionality increased from 14% to 74%. There were also large improvements in the proportions that had taken action on excluded groups or raised issues of children's exclusion with the school, and in indicators of women's and children's participation in SBMCs. In schools that have received ESSPIN intervention since 2009/10, 94% meet our standard for functioning SBMCs, compared to 72% of the schools that joined more recently. Schools where ESSPIN started working earlier were also stronger in terms of the indicators relating to inclusion. However, there were improvements in SBMC functionality between 2012 and 2014 of a similar magnitude for both sets of schools, with some suggestion that the recently joined schools are catching up with the earlier phase.

School quality: Comparison of school quality between CS1 and CS2 suggests there has been a large increase in the proportion of Lagos's schools that meet the overall school quality standard. The number meeting three or four of the four criteria defined in CS1 increased from 7% to 36%. Within CS2, schools which had been benefiting from ESSPIN interventions for longer were more likely to meet the school quality standard. Schools which entered the programme most recently improved their quality faster between 2012 and 2014 than schools which had benefited from more years in the programme, again suggesting that the recently entered schools were catching up from a lower base.

Pupil learning: Tests were conducted in literacy and numeracy for pupils in grades 2 and 4. Between 2012 and 2014 all the test scores improved, although the change was small in magnitude and only statistically significant for grade 2 literacy. Average test scores ranged from 50% in grade 4 numeracy to 69% in grade 2 literacy. Despite relatively high average scores, many children continued to struggle with items in writing and reading with comprehension, and in questions pitched at grade 4 level. There was no difference found in the results or the rate of improvement between schools which had benefited from more years of ESSPIN and those more recently included in the programme.

Overall, it can be seen that Lagos's schools have improved across almost all the areas measured in the surveys, and in some cases there have been sizeable improvements. In most cases improvements were found in all three phases of ESSPIN roll-out (2009/10, 2011/12, and 2012/13). For several indicators, including school development planning and overall school quality, more recent entrants to ESSPIN intervention improved more rapidly between 2012 and 2014 than the schools that had benefited from ESSPIN intervention for longer. This suggests that the recent entrants may have caught up and improved rapidly from a low base. Despite this, the schools that had received ESSPIN support for longer continue to outperform the more recent joiners in terms of teacher competence, headteacher effectiveness, inclusiveness, SBMC functionality, and overall quality.

At the same time there have been substantial increases in the literacy in English of children in grade 2. However, change in other indicators of children's learning have been small and non-significant, despite some very large increases in many indicators relating to school quality, including the competence of teachers. Enrolment increases have been modest in Lagos compared to other states, but there have been substantial increases in PTRs, suggesting that there may have been issues with teacher recruitment in recent years. This may provide some explanation for relatively slow progress in learning outcomes between 2012 and 2014.

Box 1. The good and bad news from the Composite Surveys in Lagos

Positive results in this report include:
- An improvement in a number of output indicators led to a large increase in the proportion of schools meeting the school quality standard, from 7% in CS1 to 36% in CS2.
- The proportion of all headteachers who meet the standard for effectiveness increased from 8% in 2012 to 67% in 2014.
- In 2014 many more schools met the inclusiveness standard than was the case in 2012.
- 74% of SBMCs were functional in 2014, up from just 14% in 2012.
- Schools which had ESSPIN intervention for longer were doing better than more recent joiners in terms of headteacher effectiveness, teacher competence, inclusiveness, SBMC functionality, and overall quality.
- Teachers who received more training improved faster between 2012 and 2014.
- Grade 2 literacy results improved significantly between 2012 and 2014.

Some challenges identified in the report include:
- There was no improvement in the proportion of Lagos's teachers as a whole who meet the competence standard.
- Children's results in grade 2 numeracy, and in grade 4 literacy and numeracy, did not change significantly over time.
- Improvements between 2012 and 2014 in schools that have received ESSPIN intervention continuously since 2009/10 have not been as large as those in the more recent phases of roll out, suggesting that progress may not be as rapid after several years of intervention.

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List of abbreviations

ACLED	Armed Conflict Location & Event Data Project
CBO	Community-Based Organisation
CS1	Composite Survey 1
CS2	Composite Survey 2
ESSPIN	Education Sector Support Programme in Nigeria
LGA	Local Government Area
LGEA	Local Government Education Authority
L2	grade 2 literacy test
L4	grade 4 literacy test
N2	grade 2 numeracy test
N4	grade 4 numeracy test
PTR	Pupil–teacher ratio
SBMC	School-based management committee
SDP	School development plan
SIP	School Improvement Programme

1   Introduction

The aims of the ESSPIN Composite Surveys are to assess the effects of ESSPIN's integrated School Improvement Programme (SIP) and report on quality of education in the six ESSPIN-supported states. This report focuses on the key findings for Lagos State. The surveys address five output indicators: teacher competence, headteacher effectiveness, school development planning, SBMC functionality, and inclusive practices in schools. They also address one outcome indicator – school quality – and one impact indicator – pupil learning achievement.

The second round of the Composite Survey (CS2), conducted in 2014, aimed to provide post-intervention data which could be compared to data from the first round of the survey (CS1) collected in 2012, in order to evaluate the extent of improvements in key indicators and gauge programme success. A further survey will be conducted in 2016 to again assess the impact of the interventions.

This report, focusing on Lagos State, presents findings from CS2 and comparisons between CS1 and CS2, covering all of ESSPIN's output, outcome and impact indicators.

1.1   ESSPIN's SIP

The ESSPIN programme aims to bring about better learning outcomes for children of basic education school age in six states, with a range of activities at the national, state, local and school levels. It has four output streams, focusing on: (i) strengthening federal government systems; (ii) increasing the capability of state and local governments for the governance and management of schools; (iii) strengthening the capability of primary schools to provide improved learning outcomes; and (iv) improving inclusion policies and practices in basic education (ESSPIN, 2013c).

Under the third of these output streams, ESSPIN's SIP aims to provide and support the use of structured materials that ensure teachers can deliver high-quality instruction, to strengthen teachers' own understanding of literacy and numeracy concepts, and to improve academic leadership and school improvement planning by headteachers (USAID, 2014). It typically works through a two-year modular programme of workshops and school visits, after which schools continue to receive school visits from government officers to maintain and continue quality gains.

Under the fourth output stream, ESSPIN aims to improve inclusion practices and to strengthen community engagement in school improvement and wider access. In particular, Output stream 4 seeks to ensure that community members, including women and girls, influence the way schools are run; that community and government organisations are better able to press for school improvement; and that schools and communities ensure that the needs of all children are met. These interventions to improve community participation through functioning SBMCs come within a challenging sociocultural context. . Qualitative research by ESSPIN (2009) found that community members were often not aware of SBMCs. SBMCs also lacked clarity on their roles and responsibilities, and lacked the resources to contribute effectively to school management. It was particularly difficult for women and students to participate, as this was a cultural taboo in many areas.

The programme's theory of change assumes that the interventions will improve five pillars (or outputs) of school quality: headteacher effectiveness, teacher competence, adoption of inclusive practices to meet the needs of pupils, introduction of SDPs, and establishment of functional school-based management. These pillars collectively contribute to an improvement in overall school quality (outcome), and this in turn increases pupil learning outcomes (impact).

Initially the programme was piloted in a sample of schools and managed by the ESSPIN infrastructure. As the programme was scaled up, the management and delivery of the support

(both Output streams 3 and 4) came under the state governments. The state infrastructure then provided the training and mentoring, using the ESSPIN model and under guidance from ESSPIN staff. We call the beneficiary schools 'ESSPIN schools' to indicate that they received the ESSPIN delivery model, but were still government schools run by the state.

1.2 ESSPIN in Lagos State

ESSPIN is working in partnership with the government of Lagos State to realise sustainable school improvement (ESSPIN 2013b). In Lagos the pilot (Phase 1) of the ESSPIN intervention focused on building the skills of teachers, headteachers and SBMCs drawn from members of the local communities. From Phase 2, the intervention continued with the key areas of headteachers and SBMCs, but introduced a focus on improving teachers' ability to deliver stronger numeracy and literacy teaching through set lesson plans.

Initially Lagos State used a cluster-based system of SBMC development, which meant that one SBMC covered up to 10 schools and not just one school. Any SBMC cluster which covered a Phase 1 school was given ESSPIN support on SBMC development from Phase 1, and further clusters received support as the programme was rolled out in later phases. There were 156 SBMC clusters covering all schools in the state (circa 1,000). Later Lagos reviewed the system and moved towards a school-based system of SBMCs in Lagos.

The key school-level interventions in Lagos under ESSPIN were (ESSPIN 2013b, 2014):

- Training for headteachers on:
  - ο academic leadership;
  - ο school planning;
  - ο management of teachers; and
  - ο working with the community.
- Training for teachers on:
  - ο generic basic teaching skills;
  - ο basic literacy teaching (initial reading skills);
  - ο basic numeracy teaching (number concepts, addition and subtraction); and
  - ο use of teaching aids, classroom organisation, and praise.

  In Lagos the decision was made to have different teachers attend the training each year in order to maximise the outreach of the training, as opposed to in other states where the same teachers were trained each year. In the CS2 survey we found that 25% of teachers had not yet received ESSPIN training.
- The 100 Phase 1 schools received two school grants in consecutive years at an average of N150,000 per year (the exact sum depending on school size). These grants were to be spent on activities agreed by the headteacher and SBMC as priorities for school improvement and included in the SDP based on a school self-evaluation. Lagos State has continued to give regular operating costs of N20,000 to schools each month.
- 40 civil society organisation members and government staff from the Department of Social Mobilisation received training on how to activate, train and mentor SBMCs.
- Community members (10 people from each of the 156 SBMC clusters) received training on establishing an SBMC, which covered:
  - ο school planning and management;
  - ο SBMC roles and responsibilities;

- ο communication and leadership;
- ο women and children's participation in SBMCs;
- ο resource mobilisation and financial processes;
- ο inclusive education and gender;
- ο child protection and participation; and
- ο change and relationship management.

Annex A presents some descriptive statistics on the schools selected for ESSPIN and those not selected, while Annex B sets out the interventions under Output stream 3 made in Lagos from 2009/10 through to 2013/14, indicating the number of days of training received by each headteacher, each teacher trained under ESSPIN, and the number of visits to the school. Annex C sets out the interventions under ESSPIN's Output stream 4, indicating the number of days of training for SBMCs, training on participation by women and children, and mentoring visits.

1.3 Selection of ESSPIN beneficiary schools

The ESSPIN programme has been gradually rolled out to more government primary schools in Lagos, such that by time of the 2014 Composite Survey 100% of schools had been benefiting from the full package for at least one year (Table 1 and Annex B). The scale of the roll-out of Output stream 3 consisted of the following stages:

- The Phase 1 (pilot) began in 2009/10 with 100 government primary schools (9% of the state's total) in 2009/10. Each state senatorial district was represented and all 20 local government areas (LGAs) were eligible (ESSPIN, 2013a). Schools had to have an adequate level of infrastructure supplied by government to be included, and then five schools were selected from each LGA. These schools continued receiving Output stream 3 activities (leadership training, teacher training, and school visits) in all years up to the survey.
- A Phase 2 roll-out began in 2011/12 with a further 500 schools (25 from each LGA).
- The SIPs were further rolled out to cover the remaining 501 schools in Lagos State from 2012/13.

Once a school was in the programme, the provision of leadership training and school visits was continuous every year. The schools from Phases 1 and 2 did not receive teacher training in 2013/14. The more years a school had been in the programme, the higher the expected improvement in output, outcome and indicators.

Table 1. Proportion of schools receiving full package of ESSPIN Output stream 3 interventions

%	2009/10	2010/11	2011/12	2012/13	2013/14	Any year
Lagos	9	9	54	100	46	100

Source: Author's calculations based on 2012/13 annual school census and intervention information provided by ESSPIN. Note: Proportions are calculated relative to the total number of schools in the 2012/13 annual school census, and so these are not perfectly accurate for other years because the total number of schools changes slightly from year to year. Where census numbers are lower than ESSPIN's intervention tables, the information from ESSPIN is used on the assumption that there is some missing data in the school census

The expansion of the programme to more schools in Phase 2 required a changed model for delivering training, with state governments taking on the management, and the training located closer to schools. The change in model makes delivery cheaper per school and more sustainable

for the states to run themselves, as well as enabling states to take control, all of which were necessary to allow scale-up. Programme staff argue that locating training closer to the schools has longer term benefits. However, we might see that in the shorter term quality standards from the pilot programme are not fully upheld as the new, much larger numbers of trainers, who typically have lower qualifications than the first wave, develop competencies.

A summary of the characteristics of Lagos's schools according to the level of ESSPIN intervention is given in Annex A. Generally, the schools with more years of ESSPIN intervention are more likely to be urban and have higher enrolment and more teachers, but a higher PTR.

According to the school census, enrolment in Lagos's public primary schools increased by 3%, rising from 389,000 to 400,000 between 2009 and 2013 (Table 2). However, enrolment in the schools captured in both censuses increased by just 0.4%, and there has been little change in the pupil–classroom ratio. At the same time, however, the number of teachers has decreased, so that the average PTR has increased from 33 to 40. This (relatively low) average hides a great deal of variation. The proportion of schools with PTRs over 50 increased from 9% in 2009 to 21% in 2013. This is likely to have had an impact on the ability of schools and teachers to deliver better learning outcomes, and should be kept in mind when interpreting the findings in this report.

Table 2. Number of schools and enrolment in the 2009 and 2013 school censuses

State	2009		2013		Enrolment change (%)	Enrolment change (schools found in both censuses only, %)
	Schools	Enrolment	Schools	Enrolment		
Lagos	986	388,577	1,009	400,277	3.0	0.4

Note. Enrolment is for primary grades 1–6.

1.4   Conflict in Lagos

This report is written in the context of growing insecurity in Nigeria, particularly in, but not limited to, three states of the north-east in which a state of emergency has been declared (Borno, Yobe and Adamawa). Across Nigeria the number of recorded incidents of political violence and conflict has increased eightfold since 1997, but in Lagos the level has remained relatively stable, though some increase in 2013 and 2014 (Figure 1). In absolute terms, this relates to 42 recorded violent events in 2014, causing 62 fatalities (Table 3). The data suggests that while Nigeria on the whole is experiencing an increase in conflict which may affect the delivery of education services, Lagos (and much of the southern sector) has been less affected.

Figure 1. Incidents of political violence in Nigeria and Lagos
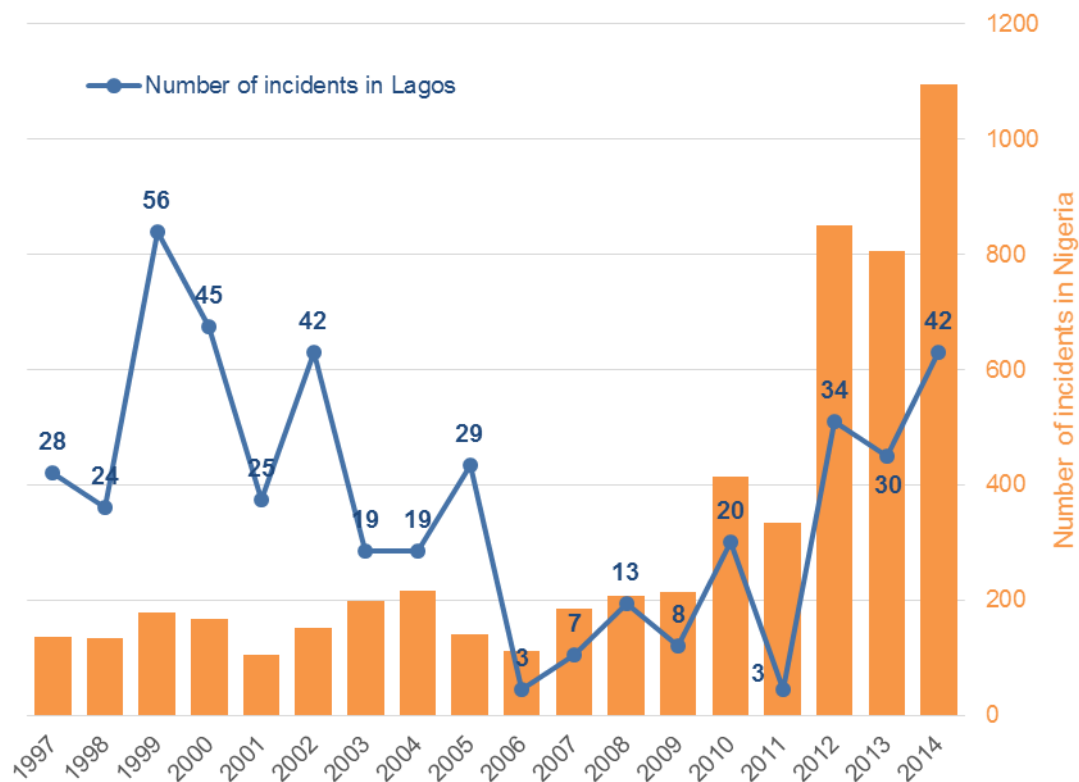
Source: Armed Conflict Location & Event Data Project (ACLED), Version 5 (1997–2014). Note all events from ACLED are included except for those categorised as protests which did not involve a fatality.

Table 3. Lagos: Political violence: Incidents and fatalities, 2010–2014

Variable	2010	2011	2012	2013	2014
Events	20	3	34	30	42
Fatalities	15	4	17	35	62

Source: ACLED, Version 5 (1997–2014). Note all events from ACLED are included except for those categorised as protests which did not involve a fatality.

2   Methodology and analysis

2.1   Evaluation strategy

2.1.1   Classifying the amount of ESSPIN intervention

For the purposes of evaluation, ESSPIN was originally intended to be rolled out in a simple phased pattern across the six states, with schools falling into one of three groups: no intervention (control); Phase 1 (roll-out prior to the 2012/13 school year); and Phase 2 (roll-out in 2012/13 or 2013/14). In practice, Lagos State decided to extend the programme based on its capacity and willingness, in order to have more schools benefit. The roll-out was made over three phases, starting in 2009/10, followed by more schools in 2011/12, and finally covering all the remaining primary schools in 2012/13.

For the purposes of evaluation, since there is no longer a strict control group with no intervention in Lagos, we instead grouped schools according to the number of years of the 'full package' of Output stream 3 support they received (see Annex B for full details). We expect that schools which entered the programme earlier, and so received more years of intervention, will be better than schools which entered later, since they have had more years to improve. In addition, these schools are expected to have improved faster in the period between 2012 and 2014, because they had more intervention during that period. When we compare change over time, we differentiate between the more-ESSPIN schools, which are those which entered in 2009/10 or 2011/12, and the less-ESSPIN schools, which entered in 2012/13.

For individual outcome indicators, we alter the classification scheme slightly according to the purpose. For example, for examining teacher competence, we consider two different groups: teachers who are in schools that have received ESSPIN intervention but who have not themselves been trained through ESSPIN; and teachers who have been trained through ESSPIN. We also use continuous versions of the intervention measures – for example, the number of years that a pupil has been exposed to expected improved school quality as a result of ESSPIN intervention. While categorical measures are easier to use for tables of descriptive statistics, a continuous measure makes sense in regression analysis, makes most use of the information, and helps us to avoid the risk that results might be altered by a slight change in the choice of categories.

2.1.2   Modes of analysis

The purpose of CS2 is both to provide insight into the changes over time in the six states where ESSPIN works, and to evaluate whether the ESSPIN model is having an effect in the specific schools where its school improvement and community inclusion interventions have operated. We are interested in a wide range of output indicators: teacher competence, headteacher effectiveness, school development planning, school inclusiveness, and the functionality and inclusiveness of SBMCs. Some of these same indicators are also combined to give an overall indicator of school quality. Finally, ESSPIN's impact is measured in terms of improved pupil learning outcomes, which we ascertain through test scores in numeracy and English literacy in grades 2 and 4. For each of these indicators, we present in the following chapter three main types of analysis:

1. Change over time between CS1 and CS2, for Lagos as a whole. These changes likely reflect changes that are beyond the control of ESSPIN as well as the ESSPIN programme.

2. Differences between schools which entered the programme in different years within the CS2 results. In the group of schools that joined the ESSPIN programme earlier we hypothesise that our output, outcome and impact measures will all be higher than in the control group. If this is the case, it provides good initial evidence that ESSPIN is effective, although it does not rule out the possibility that ESSPIN schools' better results could come from differences in school background characteristics pre-dating the ESSPIN intervention.

3. Difference in differences between more-ESSPIN and less-ESSPIN schools and over CS1 and CS2. See Box 2 below.

In each case we use statistical significance tests (t-tests or z-tests) to give an indication of whether a difference in results (over time or between intervention groups) is significant. This should not be taken as rigorous hypothesis testing (given the very large number of indicators tested), but it provides a guide to whether a difference between the weighted average results in two groups is large enough relative to the variance of the results to be able to provide us with a useful indication of likely differences in the population of schools in the six states. For analysing difference in differences we also use regression analysis; these are reported in Annex D.

It should be noted that the lack of a true control group weakens our analysis as the schools we examine have all had relatively similar intervention, but to different degrees. This makes it less likely that we would detect significant differences among the intervention categories; this should be kept in mind when interpreting the cross-sectional analysis.

2.2   Sampling, coverage and weights

In Lagos the sample allocation for CS1 was 105 schools, giving 35 each in the pilot (Phase 1) category, 35 in the Phase 2 roll-out, and 35 schools which at that point had not received any ESSPIN interventions. In CS2, 105 schools were sampled again – 36 from the Phase 1 category and 69 from the later roll-out of ESSPIN (Megill, 2014). There are no control schools in Lagos State. The number of schools sampled in each of the categories (as defined in CS2, so taking account of the full period of intervention) is shown in Table 4.

Table 4. Sample in CS1 and CS2 and population of schools, by intervention group

Category for sampling purposes	CS1 sample	CS2 sample	Population	Categories for analysis	
				Expected to be better at CS2	Expected to have improved during CS1–CS2
medium	69	69	1,001	yes	yes
maximum	34	36	100	yes	yes
Total	103	105	1,101		

Note: The sample size shown is the actual sample for which data was collected.

In each school the headteacher was interviewed, as was the SBMC chairperson.

Teachers within each school were sampled from the population present in the school on the day of the survey visit and who taught grades 1–6 in the present term, using the school's teacher attendance register. The sample was reduced from 10 teachers in CS1 to six teachers in CS2 in order to improve the accuracy of the indicators.

Box 2. Difference in differences

The Composite Survey may reveal that schools with more ESSPIN intervention are of higher quality, or have better learning outcomes, than other schools. But how do we know whether this can be attributed to ESSPIN and is not just because the schools with more intervention were better in the first place? One way is to focus on change over time using 'difference in differences' methods. The underlying idea is that schools which have had more ESSPIN intervention between CS1 and CS2 – that is, between 2012 and 2014 – ought to have improved faster during that period than schools which had less ESSPIN intervention.

We can measure this degree of improvement by comparing averages of the indicator of interest – school quality, say – during CS1 and CS2, in schools which had less ESSPIN intervention and those that had more intervention. Is the change over time greater in the schools with more intervention? If so – and if statistical tests confirm that this result is unlikely to have occurred by chance – then this is considered good evidence that ESSPIN itself had an effect and was not just lucky in choosing schools that were good in the first place (selection bias).
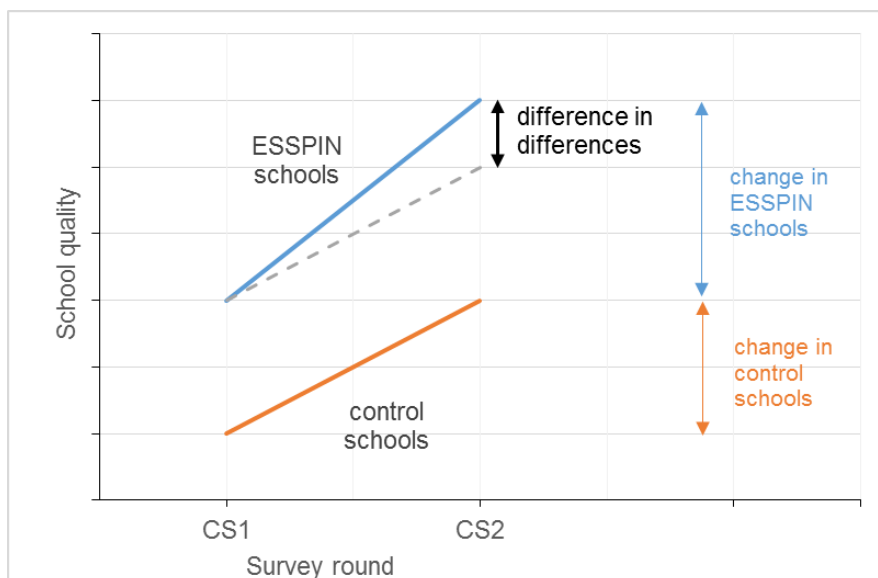
Does a significant difference in differences (or treatment effect) prove that the faster improvement in some schools can be attributed to ESSPIN? Not absolutely. It is still possible that there are other factors at play causing a faster improvement in some schools than others. For this reason, in the overall CS2 report we use other statistical techniques to examine whether ESSPIN schools had different characteristics to start with, and to control for any such differences.

Pupils were sampled from the pupil registers for grade 2 and 4 classes – four each for numeracy and literacy by grade.

Within the schools, it was not always possible to administer all of the intended instruments. This could happen because the school was very small, and lacked a sufficient number of pupils and eligible teachers. It also sometimes happened that teachers and pupils were not present at 8am, when sampling was conducted; and occasionally pupils and teachers would leave the school after being sampled (for example, due to illness). In total 97% of the intended sample of pupils was included, and 83% of teachers. The actual numbers of schools, teachers and students sampled is given in Table 5.

Table 5. Lagos: Sample coverage in CS2

Schools		Teachers			Pupil tests			
Intended sample	Actual	Interview	Less. Obs.	Tests	L2	L4	N2	N4
105	105	569	545	526	415	410	413	409

Note: *L2* refers to the grade 2 literacy test, *L4* to the grade 4 literacy test, *N2* to the grade 2 numeracy test, and *N4* to the grade 4 numeracy test.

Simple averages of the results from the Composite Survey data would not be representative of what is happening across the state, because (as Table 4 above shows) in terms of the proportion of schools in each of the roll-out phases, the profile of schools in the survey is not identical to the profile of schools in the state as a whole. We overcome this by applying sample weights which give greater weight to the results in schools that are relatively under-represented in the survey. Sample weights were calculated for the CS1 and CS2 schools, teachers and pupils.

2.3   Fieldwork and instruments

Fieldwork for CS2, including the pupil tests, was conducted during May and July 2014. The following data collection was carried out:

(i)   Structured interviews were conducted with teachers, headteachers, and SBMC chairpersons;

(ii)   A lesson observation was conducted for each teacher sampled;

(iii) Teacher tests were conducted at the end of the survey, in a number of testing centres in each state; and

(iv) Pupils in primtary grade 2 and grade 4 were given tests in either literacy or numeracy.

Two indicators of aggregate learning outcomes are used in this note. The first is the total mark achieved by the pupil in each test paper, expressed as a percentage score. The second is the proportion of tested pupils who successfully answer a subset of questions which aim to measure a specific field of learning, as described in ESSPIN's logframe. Although the latter may be important for assessing ESSPIN's success in improving specific types of learning (e.g. the ability to read with comprehension), their reliance on data from a small number of questions (2–3) is statistically problematic. They are less reliable and less sensitive indicators than the total mark, which uses all the data available. For completeness, both types of indicator are used in this report.

3   Findings

Box 3. How to interpret the analysis and expected results

For each indicator, three types of analysis are presented:

- Comparison of averages between CS1 and CS2. Here the results are representative of all schools (or teachers, or pupils) in the state, as found in CS1 and then in CS2. This depends on both general trends at the state level and any improvements due to ESSPIN school-level interventions. The hope is that ESSPIN state-level interventions combined with the SIP will lead to an improvement in state-wide averages.
- Comparison of groups in CS2, according to when they entered the programme. The earlier they entered, the more years of intervention they have received and so the better we expect their performance to be.
- Comparison of schools which benefited from support in 2011/12 and 2012/13, with those which did not, to see whether they improved more or faster between 2012 and 2014. Here we expect the supported schools to improve relative to other schools over the two years.

In Lagos all schools benefited from the ESSPIN intervention for at least one full year before 2013/14. As such the analysis compares schools (or teachers or pupils) from fairly similar categories. Therefore we might not detect significant differences between these groups, but might expect to find an impact on state averages since all schools have benefited.

3.1   Teacher competence

3.1.1   Main analysis

The ESSPIN logframe sets four criteria for judging competence of teachers (Box 4). A teacher who teaches English or maths is defined as competent if he or she meets at least three of these, while teachers of other subjects are exempted from one of the four criteria (knowledge of the English or maths curriculum) and defined as competent if they meet two of the remaining three criteria.

For CS2, a fifth criterion was added, based on teacher test results. Teachers are defined as competent if they are competent according to the original criteria, and can also score at least 50% in primary school-level literacy and numeracy tests.

Box 4. Logframe standard for teacher competence

A teacher must meet three out of four of the following criteria to meet the competence standard if he/she teaches English and/or maths. Teachers of other subjects must meet two out of three criteria (excluding 1 below):

1) Knowledge of English or mathematics curriculum (based on interview);

2) Use of at least one teaching aid during lesson observation;

3) Greater use of praise than reprimands during lesson observation; and

4) In terms of class organisation, assigning individual or group tasks at least twice during lesson observation (or for two contiguous five-minute blocks).

For CS2, a new stricter indicator of teacher competence has been introduced. This excludes reading from or writing on, or having pupils copy from, the blackboard as a use of a teaching aid, and adds a fifth criterion:

5) Literacy and numeracy: scores at least 50% in both an English literacy and a numeracy test.

Table 6 compares the results for Lagos's teachers in CS1 and CS2. (The fifth criterion is not available here as teacher tests were not conducted as part of CS1.) Teachers improved at using teaching aids and using praise more than reprimands in the classroom between CS1 and CS2, and in CS2 over 96% of teachers met these criteria. There was a decline in the number of teachers assigning different types of tasks during the lesson observation. There was no significant change in the proportion of teachers meeting the overall competence standard, currently 68%, or in the average competence score, currently 70%. It is therefore hard to conclude that there has been a definite improvement in teacher competence in Lagos State between 2012 and 2014.

Table 6. Lagos: Teacher competence in CS1 and CS2

	CS1	CS2	
(1) Knowledge of English/maths curriculum	53.4	43.2	
(2) Use of 1+ teaching aid	83.1	96.7	+
(3) Praise more than reprimand	80.4	97.7	+
(4) Assigns 2+ ind./group task	51.8	40.6	-
Competence score (CS1 version)	68.7	69.9	
Teacher competence standard (CS1)	71.1	68	

Note: + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; p < .05).

Focusing on the findings in CS2, there is some evidence to suggest that teachers who have received ESSPIN training directly themselves perform better than teachers who have not (Table 7). We distinguish two groups of teachers: (1) those who are in schools that received ESSPIN intervention but who did not individually receive ESSPIN teacher training; and (2) those who are in ESSPIN schools and individually received ESSPIN teacher training. The teachers who had received training were better at using teaching aids, assigning group and individual tasks during the lesson, and achieved a higher overall competence score than teachers who had not. However teachers who had been trained were slightly worse in the literacy test, which is surprising given the focus on literacy (and numeracy) in the ESSPIN teacher component.

Table 7. Lagos: Teacher competence in CS2, by intervention group

	(1) ESSPIN school	(2) ESSPIN-trained	
Knowledge of English/maths curriculum	39.1	46	
Use of 1+ teaching aid	92.1	100	+
Use of 1+ teaching aid excl. read/write/copy from blackboard	82.7	89.1	
Praise more than reprimand	96	99	
Assigns 2+ ind./group task	34.3	45.2	+
Literacy score (%)	70.5	67	-
Numeracy score (%)	82.9	81.1	
Passes literacy and numeracy test	93.6	88.3	
Competence score (CS1 version)	66	72.8	+
Teacher competence standard (CS1)	64	70.9	
Competence score (CS2 version)	66.5	70.5	+
Teacher competence standard (CS2)	56.5	57.2	

Note: The CS2 version of the competence score adds the teacher's performance in the literacy and numeracy tests to the number of other criteria met by the teacher – for example, a teacher who met all four original criteria and also scored 100% in the literacy and numeracy tests would receive a competency score of 100%; + / - indicate a significant difference between the results for teachers who individually received training and those who did not.

Did teachers benefiting from ESSPIN training improve faster than those who did not between 2012 and 2014? When we compare the change in mean competency scores between CS1 and CS2 (Table 8), we find there was no significant difference between the results for non-ESSPIN and ESSPIN-trained teachers. However, using regression analysis suggests a more nuanced story (see). When we consider intervention at the school level, teachers in schools that joined ESSPIN intervention more recently have improved faster than those in schools that joined the intervention at the beginning (2009/10). But this partly reflects the teachers who are in ESSPIN intervention schools but not themselves receiving training. When we consider intervention at the individual teacher level (and adjust for the time when they joined the school), teachers who have received more training have improved faster.

Table 8. Lagos: Teacher competence difference in differences (comparison of means)

Teacher competence scores (CS1 version)	(1) ESSPIN school	(2) ESSPIN-trained
CS1	66.1	72.8
CS2	66	72.8
Difference	-0.2	-0.1

Note: * indicates a significantly different difference than teachers who did not benefit from ESSPIN training (p < .05).

Overall in Lagos the findings suggest that there were improvements in teacher competence for some teachers, and that the teachers who personally received ESSPIN training were more competent at some criteria than others. This was not consistent across all criteria. There is evidence that the more training a teacher received the faster they improved between 2012 and 2014.

3.1.2   Findings from the teacher content knowledge tests

The teacher tests included items pitched at primary school grades 1 to 5 and focusing on different areas: foundational skills for teaching literacy; writing; reading; grammar; number concepts; calculation; and other numeracy skills. In Lagos, teachers were better at reading and grammar than they were at foundational literacy and writing (Figure 2). In mathematics, teachers performed better in number concepts than calculation and other numeracy items, but test scores were above 78% in all three domains. As would be expected, teachers' ability to answer the questions falls as the grade level of the questions increases (Figure 3). On the whole the mathematics items were easier for teachers in Lagos than the English items.

Figure 2. Lagos: Teacher test scores across domains of learning
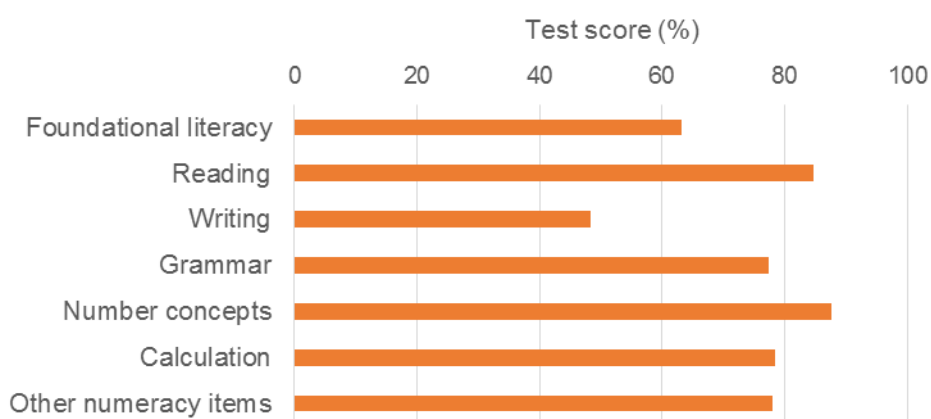
Figure 3. Lagos: Teacher test scores by grade
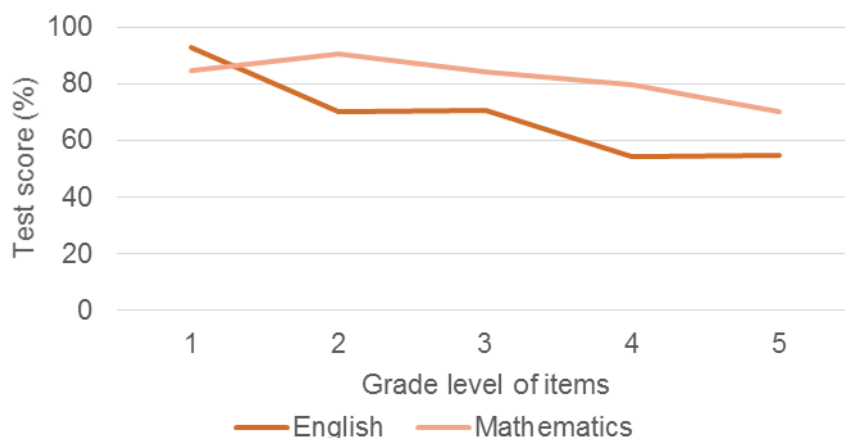
3.2   Headteacher effectiveness

The ESSPIN logframe defines headteacher effectiveness in terms of seven criteria (Box 5). These reflect both activities by the headteacher and behaviour across the teachers and pupils, such as agreement on what time the school should open (criterion 4), presence in class at the beginning of the school day (criterion 5), and appropriate break and lesson durations (criteria 6 and 7).

In Lagos there was an improvement in headteacher effectiveness between CS1 and CS2 in five out of seven of the criteria (Table 9). Some of these improvements were substantial, such as the number of headteachers conducting lesson observations (up from 19% to 75%) and professional

development meetings (up from 3% to 80%). Fewer headteachers were taking action on teacher attendance. The improvement outweighed any decline, and as a result the average number of criteria met increased from 3.2 to 5, and the number of heads who met the effective standard increased eightfold from 8% in 2012 to 67% in 2014; both of these changes were significant.

Box 5. Logframe standard for headteacher effectiveness

A headteacher must ensure that five out of seven of the following criteria are met in order to meet the headteacher effectiveness standard:

1)   Carry out two or more lesson observations in the past two weeks;

2)   Hold four or more professional development meetings since the start of the 2011/12 or 2013/14 school year (NB: the survey took place more than nine months into the school year);

3)   School has a teacher attendance book and the headteacher recalls at least two actions taken to promote teacher attendance;

4)   Clear school opening time: more than 50% of pupils sampled agree on the school opening time and more than 50% of teachers sampled agree on the school opening time;

5)   More than 50% of classes are in their classroom with their teacher within 30 minutes of school opening time;

6)   Length of morning break is 35 minutes or less, except in Enugu when it must be 15 minutes or less; and

7)   More than 50% of lessons observed finished within five minutes of a standard 35-minute lesson duration (i.e. the lesson was between 30 and 40 minutes long).

Table 9. Lagos: Headteacher effectiveness in CS1 and CS2

	CS1	CS2	
(1) Lesson observations	18.8	75.4	+
(2) Professional development meetings	2.9	80.4	+
(3) Action on teacher attendance	96.1	64.2	-
(4) Clear opening time	25	67	+
(5) In class on time	71.4	91.8	+
(6) Appropriate morning break	90.7	77.2	
(7) Appropriate lesson length	11.7	41.1	+
Number of criteria fulfilled (/7)	3.2	5	+
Effective headteacher (5/7 criteria met)	8.2	66.5	+

Note: + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; $p < .05$).

Focusing on the CS2 data, the headteachers who entered the programme earlier tend to have higher results on the indicators, and more were found to meet the effective standard, although the differences were not significant (Table 10). The results for schools which have received the intervention for longer are compared to the 2012/13 entry schools, as it is assumed that the longer the intervention has been in place, the more improvement schools should have seen (so 2012/13 is the closest to a control group). Generally the 2009/10 entry and 2011/12 entry schools do show a higher performance than the 2012/13 schools, but not significantly so. The only significant difference was that classes were more likely to start on time in schools which had been in ESSPIN since 2009/10.

Table 10. Lagos: Headteacher effectiveness in CS2, by the start year of ESSPIN intervention

	(i) 2012/13	(ii) 2011/12		(iii) 2009/10	
(1) Lesson observations	69.1	79.7		81.3	
(2) Professional development meetings	75.9	83.9		82.9	
(3) Action on teacher attendance	62.7	65		66.5	
(4) Clear opening time	63.8	68.4		73.9	
(5) In class on time	83.9	96.9		100	+
(6) Appropriate morning break	76.7	76		85.1	
(7) Appropriate lesson length	30.6	48.4		52.4	
Number of criteria fulfilled (/7)	4.7	5.2		5.3	
Effective headteacher (5/7 criteria met)	58.9	70.9		77.4	

Note: + indicates a significant positive difference between each group and the 2012/13-entry schools.

As in the previous section on teacher competence, we also examine change over time in headteacher effectiveness to see whether headteachers in schools that received more ESSPIN intervention between 2012 and 2014 improved faster than comparators. Both more-ESSPIN schools (three years of intervention) and less-ESSPIN schools saw a positive change in mean between CS1 and CS2 (Table 11). There is no significant difference between the two groups' improvements, perhaps unsurprisingly given the similarity of their experience under ESSPIN. The regression method is reported in Annex D, and finds similar results.

Table 11. Lagos: Headteacher effectiveness difference in differences (comparison of means)

Number of criteria met (/7)	(i) Less-ESSPIN	(ii) More-ESSPIN
CS1	3.1	3.3
CS2	4.7	5.2
Difference	1.6	1.9

Note: * indicates a significantly different difference than that in less-ESSPIN schools (p < .05).

In summary, headteacher effectiveness has improved substantially in Lagos State, and the number of schools meeting the standard increased from 8% to 67% in just two years. This large jump shows the achievement of having supported all schools under the ESSPIN programme. As all schools have benefited from the ESSPIN intervention, it is hard to determine how much each additional year of the support increases headteacher effectiveness.

3.3   School development planning

The definition of effective school development planning depends on five criteria (Box 6). In Lagos there was a significant improvement in performance in four of the five criteria between CS1 and CS2, and the fifth criterion also improved (Table 12). Some of the biggest improvements were in the proportions of schools who carried out a self-evaluation process and those with a current SDP available. Although still only 17% of schools had carried out more than four SDP activities, this was more than a fivefold increase from two years earlier. Overall the proportion of schools meeting the effective school development planning standard increased from 9% to 20%.

Box 6. Logframe standard for effective school development planning

The school must meet criterion 1 and criterion 2 listed below and at least two out of three of the remaining criteria in order to meet the effective school development planning standard:

1)   Written evidence of school self-evaluation process for current school year;

2)   SDP for current school year available;

3)   SDP contains three or more activities which aim to strengthen teaching and learning;

4)   Physical evidence of four or more activities from SDP having been carried out; and

5)   Cashbook is up-to-date (balanced in the last 60 days).

Table 12. Lagos: SDP effectiveness in CS1 and CS2

	CS1	CS2	
(1) Written evidence of school self-evaluation process	48	88.7	+
(2) SDP available	32	79.4	+
(3) SDP contains 3+ activities to strengthen teaching and learning	25.5	41.2	+
(4) Evidence that 4+ activities from SDP carried out	3.2	16.7	+
(5) Cashbook up-to-date	12.9	21.7	
Number of SDP criteria fulfilled (/5)	1.2	2.5	+
School meets effective school development planning standard	8.7	19.7	

Note: + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; $p < .05$).

Focusing on CS2 schools, the results again find no significant difference between schools according to the year in which they entered the ESSPIN programme and hence the extent to which they are expected to have improved (Table 13). In most of the indicators the 2009/10 entry schools perform better than 2012/13 entry; for the 2011/12 entry schools it is more mixed, though no differences are significant. The similarity in results is likely due to the relatively small gap between the groups in the intervention they have received.

Table 13. Lagos: SDP effectiveness in CS2, by the start year of ESSPIN intervention

	(i) 2012/13	(ii) 2011/12	(iii) 2009/10	
(1) Written evidence of school self-evaluation process	87.8	90.8	81.9	
(2) SDP available	75.5	80.8	88.9	
(3) SDP contains 3+ activities to strengthen teaching and learning	41	40.1	46.9	
(4) Evidence that 4+ activities from SDP carried out	20.2	10.9	30.4	
(5) Cashbook up-to-date	24.7	18.7	24.1	
Number of SDP criteria fulfilled (/5)	2.5	2.4	2.7	
School meets effective school development planning standard	23.3	15.4	26	

Note: + indicates a significant positive difference between each group and the 2012/13-entry schools.

To assess whether schools improved faster when they had had more ESSPIN intervention, we compare the change of means in the number of criteria met for schools expecting more versus less improvement. The results show that less-ESSPIN schools actually improved significantly more than schools which benefited from more years of ESSPIN (Table 14). It may be that schools which entered the programme later had more 'catching up' to do and so were able to improve faster than

schools which had entered the programme earlier. Difference in differences using regression analysis is shown in Annex D and also shows this catch-up effect.

Table 14. Lagos: SDP effectiveness difference in differences (comparison of means)

Number criteria met (out of 5)	(i) Less-ESSPIN	(ii) More-ESSPIN
CS1	0.1	2
CS2	2.5	2.5
Difference	2.4	0.5*

Note: * indicates a significantly different difference than that in less-ESSPIN schools (p < .05).

In summary, SDP has improved substantially in Lagos State across the separate criteria, with schools now meeting half of the criteria (2.5 out of 5) on average. Unexpectedly it appears that the improvement was faster in schools which had experienced a shorter intervention period.

3.4 School inclusiveness: meeting the needs of all pupils

The school inclusiveness standard depends on meeting three out of four criteria (Box 7), and schools are defined as partially meeting the standard if two criteria are met. In Lagos there were improvements in all the criteria between CS1 and CS2 and significantly so in terms of headteachers taking action to improve pupil attendance and having activities to improve access in the SDP (Table 15). The proportion of schools meeting the overall standard improved significantly (from 24% to 46%).

Box 7. Standard for school inclusiveness (meeting the needs of all pupils)

> The school must meet at least three of the four criteria listed below in order to meet the school inclusiveness standard. The standard is partially met if two criteria are met:
>
> 1) Headteacher states three or more actions that he/she has taken to improve pupil attendance;
>
> 2) SDP contains two or more activities which aim to improve access;
>
> 3) More than 50% of teachers observed provided evidence of using two or more assessment methods (marked class test, marked pupil workbook, or graded examination paper); and
>
> 4) More than 50% of teachers observed met the spatial inclusion criterion (defined as engaging with at least one pupil from four different areas of the classroom during a lesson) and more than 50% of teachers observed met the gender inclusion criterion (defined as engaging with boys and girls proportionally to their presence in the classroom within a 10% margin; for example, if the class contains 50% girls then teachers who engage with girls between 60% and 40% of total engagements meet the criterion).

Focusing on CS2 schools, generally the schools which started the programme earlier tended to have higher results in the inclusiveness indicators than those which started later, but not significantly so (Table 16). The only significant difference was that schools which received interventions from 2009/10 were more likely to partially meet the standard (two out of four criteria) than those entering in 2013/14.

Table 15. Lagos: School inclusiveness in CS1 and CS2

	CS1	CS2	
(1) 3+ actions to improve attendance	40.5	57.2	+
(2) 2+ activities in SDP to improve access for disadvantaged children	11.9	24.6	+
(3) >50% of teachers use 2+ assessment methods	92.3	97.5	
(4) >50% of teachers spatially inclusive and >50% are gender inclusive	45	53.2	
Number of inclusiveness criteria fulfilled (/4)	1.9	2.3	+
Inclusiveness score	78.1	80	
School partially met inclusiveness standard (2–4 criteria out of 4)	63.4	80.3	+
School fully met inclusiveness standard (3–4 criteria out of 4)	23.8	45.6	+

Note: + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; p < .05).

Table 16. Lagos: School inclusiveness in CS2, by the start year of ESSPIN intervention

	(i) 2012/13	(ii) 2011/12	(iii) 2009/10	
Inclusiveness criteria				
(1) 3+ actions to improve attendance	52.5	59.5	66.3	
(2) 2+ activities in SDP to improve access for disadvantaged children	23	23.1	39.5	
(3) >50% of teachers use 2+ assessment methods	97	97.3	100	
(4) >50% of teachers spatially inclusive and >50% are gender inclusive	48.1	59	46.5	
Overall inclusiveness standard				
Number of inclusiveness criteria fulfilled (/4)	2.2	2.4	2.5	
Inclusiveness score	78.3	81.5	80	
School partially met inclusiveness standard (2–4 criteria out of 4)	71.4	85.7	92.7	+
School fully met inclusiveness standard (3–4 criteria out of 4)	41.8	47	55.7	
Detailed				
Number of actions to improve attendance	2.8	2.8	3.2	
Number of activities on access for disadvantaged children	0.8	0.8	1.2	
Average number of assessment methods used	2.4	2.6	2.2	
Average number of zones participating in lessons	4.9	5.3	5.3	
Average gender equity score (0=completely unequal, 100=perfectly equal)	91.3	90.7	90.7	

Note: + indicates a significant positive difference between each group and the 2012/13-entry schools. The gender equity score for a teacher is $100 - 100 \times abs(\frac{g}{g+b} - \frac{G}{G+B})$ where *g* is the number of girls who participate, *b* is the number of boys who participate, *G* is the number of girls present in the class, and *B* is the number of boys present in the class. It is expressed as a percentage score. For a lesson where the proportion of girls and boys participating is exactly equal to the proportion of girls and boys sitting in the lesson, the gender equity score will be 100; for a lesson where no boys participate, or no girls participate, the score will be zero.

Difference in difference analysis of inclusiveness of schools in Lagos depending on the level of ESSPIN intervention has been carried out. The change in means method (Table 17) finds that all

schools improved their inclusiveness, but not by significantly different amounts. The regression method, presented in Annex D, finds the same.

Table 17. Lagos: School inclusiveness difference in differences (comparison of means)

Inclusiveness score	(i) Less-ESSPIN	(ii) More-ESSPIN
CS1	75	80.3
CS2	78.3	81.3
Difference	3.3	0.9

3.5   SBMC functionality and inclusiveness

ESSPIN conducted qualitative research into SBMCs and community engagement in education in five ESSPIN states in 2009 (ESSPIN 2009) – Jigawa, Kaduna, Kano, Kwara and Lagos. This research suggested that SBMCs were not functioning well: there was a lack of clarity and understanding over the SBMC's role and responsibilities; they lacked the financial resources to support schools in the ways that Local Government Education Areas (LGEA) often expected them to; community members were sometimes excluded by local elites; and there was little participation by women and children, despite guidelines requiring their inclusion.

In this context, SBMCs were starting from a low base and with substantial sociocultural barriers to be overcome to reach functionality and inclusive participation. ESSPIN has aimed to improve community involvement in schools through functioning SBMCs and increased women's and children's participation, with a number of interventions under its Output stream 4 (see Annex C). By 2013/14 this type of support had been extended to 54% of Lagos's primary schools, and reached the final 46% in 2013. Since all schools had benefited by the time of the survey, we would expect there to be some impact on the state averages. In addition, Lagos moved from cluster-based to school-based SBMCs, which may affect how functional the committees are.

By the time of the first round of the Composite Survey, more than 80% of schools in the sample had SBMCs, and by CS2, all of the schools in the sample had them (Table 18). This does not mean that all the SBMCs are functional or inclusive, however. In Lagos, some schools only received ESSPIN Output stream 4 support in 2013/14, and women's and children's participation training had not been rolled out at all. Therefore we might not expect high performance in these indicators in CS1 or any substantial impact by the time of CS2. The following sections use criteria and standards defined by the ESSPIN logframe to examine SBMC functionality and the extent to which SBMCs are inclusive of women and children.

Table 18. Lagos: Sample size of schools with SBMCs

	CS1	CS2
Schools sampled in Lagos	103	105
Schools with SBMCs sampled in Lagos	84	105

3.5.1   SBMC functionality

There are nine criteria used to assess SBMC functionality, of which five must be fulfilled to meet the logframe standard (Box 8). In the schools in Lagos there was a significant improvement in all the criteria for SBMC functionality between 2012 and 2014 (Table 19). Some of these were substantial jumps, such as the number of SBMCs which networked with other community groups,

which increased from 5% to 66% in two years. The proportion of schools' SBMCs meeting the overall standard for functionality increased from 14% to 74%, suggesting that the ESSPIN activities working with SBMCs have been very effective.

Two additional criteria related to the inclusiveness of SBMCs are also examined in this section: whether the SBMC did anything to support commonly excluded groups; and whether it raised issues of children's exclusion from school with the community, LGEA or state government. There was again a significant and sizeable increase on both of these criteria between 2012 and 2014 in Lagos.

The large improvement in SBMCs could be related to the decision to move from a cluster-based system of SBMCs to school-based one in Lagos. The school-based SBMCs may be more functional, and it also may be the case that the indicators in the Composite Survey are more appropriate for a school-based system than for measuring the functionality of cluster-based SBMCs.

Box 8. Logframe standard for SBMC functionality

The school must meet at least five of the nine criteria listed below in order to meet the SBMC functionality standard for the current school year:[1]

1) Two or more SBMC meetings have taken place since the start of the current school year (written evidence);

2) SBMC conducted awareness-raising activities (written or oral evidence);

3) SBMC took steps to address exclusion (written or oral evidence);

4) SBMC networked with Community-Based Organisations (CBOs), traditional or religious institutions, or other SBMCs (written or physical evidence);

5) SBMC interacted with local government education authorities on education service delivery issues (written or physical evidence);

6) An SBMC women's committee exists (written or physical evidence);

7) An SBMC children's committee exists (written or physical evidence);

8) SBMC contributed resources for the school (written or physical evidence); and

9) The SBMC chair visited the school at least three times from the start of the current school year (written evidence).

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[1] A slightly different standard with 10 criteria was used in CS1. The new standard with nine criteria was applied to both the CS1 and CS2 data.

Table 19. Lagos: SBMC functionality in CS1 and CS2

	CS1	CS2	
(1) 2+ meetings this school year	30.9	80.9	+
(2) Conducted awareness-raising	29.8	75.2	+
(3) Addressed exclusion	21.8	40.6	+
(4) Networked with CBOs/institutions/other SBMCs	5.1	66	+
(5) Interacted with LGEA	16.4	43.7	+
(6) Has women's committee	22.2	64.4	+
(7) Has children's committee	22.6	66	+
(8) Contributed resources for school	27.3	77	+
(9) Chair visited school 3+ times	10.6	51.6	+
Schools meeting functioning SBMC standard	14.4	74.3	+
Number of SBMC functionality criteria met (/9)	2	5.6	+
Additional criteria			
Action for commonly excluded groups	9.4	35.9	+
Raised issue of children's exclusion	1.4	40.6	+

Note: + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; p < .05).

Looking at the results for schools in CS2, there is some suggestion that schools which joined in 2009/10 and so had more years of the ESSPIN intervention had more functional SBMCs than those which had only one year of intervention (Table 20). These schools which joined earlier had 94% of their SBMCs meet the functionality standard, compared with 72% of the later joiners.

Table 20. Lagos: SBMC functionality in CS2, by the start year of ESSPIN intervention

	(i) 2012/13	(ii) 2011/12	(iii) 2009/10	
(1) 2+ meetings this school year	81.3	79	88.8	
(2) Conducted awareness-raising	74.2	74.1	85	
(3) Addressed exclusion	39	38.6	57.5	
(4) Networked	59.7	70.3	70.7	
(5) Interacted with LGEA	43.7	43.6	44.6	
(6) Has women's committee	55.7	67.5	86.6	+
(7) Has children's committee	58.3	71	74.6	
(8) Contributed resources for school	73.2	79.2	83	
(9) Chair visited school 3+ times	41.3	60.7	51.3	
Standard G: functioning SBMC	72.4	72.1	93.5	+
Number of SBMC functionality criteria met (/9)	5.2	5.8	6.4	+
Additional criteria				
Action for commonly excluded groups	31.5	34.3	62.9	+
Raised issue of children's exclusion	39	38.6	57.5	

Note: + indicates a significant positive difference between each group and the 2012/13-entry schools.

Did SBMC functionality improve more in schools which had received more and longer interventions through ESSPIN? The comparison of means method of difference in differences finds that all schools improved the functionality of their SBMCs, but there was no significant additional effect of the longer support from ESSPIN activities (Table 21).

Table 21. Lagos: SBMC functionality difference in differences (comparison of means)

Number criteria met (out of 9)	(i) Less-ESSPIN	(ii) More-ESSPIN
CS1	0.9	2.7
CS2	5.2	5.9
Difference	4.4	3.2

Note: * indicates a significantly different difference than that in less-ESSPIN schools (p < .05).

3.5.2   Women's inclusiveness

The 2009 study of SBMCs found that community members were excluded from the process by local elites, and as such SBMCs were little known about and lacked a link to the community. In addition, the requirement (as stated in the guidelines) for participation by women and students was often ignored where this was felt inappropriate in the local culture. In this section and the following section, we examine the extent to which SBMCs were inclusive of women's and children's concerns in 2012 and 2014. We measure SBMC women's inclusiveness using four criteria (Box 6).

In Lagos there was a significant improvement between CS1 and CS2 on three of the four criteria, and the total number of schools meeting the standard increased from 22% to 53% (Table 22). This improvement is particularly impressive and is perhaps surprising given that women's participation training, which includes establishing women's committees, had not been rolled out in Lagos.

Box 9. Logframe standard for SBMC women's inclusiveness

The school must meet at least three of the four criteria listed below in order to meet the SBMC women's inclusiveness standard for the last school year:

1)   At least one woman attended two or more SBMC meetings (written evidence);

2)   Female member of SBMC raised at least one issue at SBMC meetings (written evidence or oral evidence from a female member of the SBMC);

3)   At least one issue raised by a female member at an SBMC meeting led to action (written, physical or oral evidence from a female member of the SBMC); and

4)   At least one SBMC women's committee meeting took place.[2]

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[2] This criterion has been slightly altered since CS1, where it also required the women's committee to have a female leader.

Table 22. Lagos: SBMC's women's inclusiveness in CS1 and CS2

	CS1	CS2	
(1) At least one woman attended 2+ meetings (%)	36.7	77.6	+
(2) Female member raised an issue (%)	47.2	78.3	+
(3) Issue raised by female member led to action (%)	33.7	23.8	
(4) Women's committee met (%)	4.1	62.4	+
Number of criteria met	1	2.4	+
Meets standard (3/4 criteria)	22	52.8	+

Note: Schools that did not have SBMCs at all in CS1 are excluded from the analysis; + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; p < .05).

In the CS2 results, SBMCs in schools which started the ESSPIN programme earlier tend to have met more criteria for women's inclusiveness than schools which entered in 2012/13 (Table 23).

Table 23. Lagos: SBMC women's inclusiveness in CS2, by the start year of ESSPIN intervention

	(i) 2012/13	(ii) 2011/12		(iii) 2009/10	
(1) At least one woman attended 2+ meetings (%)	72.5	79.7		88.8	
(2) Female member raised an issue (%)	76.9	79.5		78.4	
(3) Issue raised by female member led to action (%)	24.5	18.4		47	
(4) Women's committee met (%)	45.2	76	+	68.6	
Number of criteria met	2.2	2.5		3	+
Meets standard (3/4 criteria)	44.5	56.8		66.1	

Note: + indicates a significant positive difference between each group and the 2012/13-entry schools.

The difference in differences analysis of the average number of criteria met again finds no significant treatment effect, implying that while all schools did improve, the SBMC women's inclusiveness did not improve any faster in schools which had benefited from more ESSPIN over the period than other schools (Table 24).

Table 24. Lagos: SBMC women's inclusiveness difference in differences (comparison of means)

Number criteria met (/4)	(1) Less-ESSPIN	(2) More-ESSPIN
CS1	0.5	1.3
CS2	2.2	2.6
Difference	1.7	1.3

Note: Schools that did not have SBMCs at all in CS1 are excluded from the analysis; * indicates a significantly different difference than that in less-ESSPIN schools (p < .05).

3.5.3   Children's inclusiveness

Earlier qualitative research (ESSPIN, 2009) found that many SBMCs did not allow the participation of children, and that where they had student members, they were not always able to be invited or may not have been comfortable voicing opinions in meetings. In this section, we examine whether SBMCs have improved in the extent to which they are inclusive of children, in accordance with guidelines on how they are supposed to operate. There are four criteria in the standard on SBMC children's inclusiveness.

Across Lagos State the level of children's inclusiveness in SBMCs improved in three out of the four criteria, and the average number of criteria met increased from 0.5 to 1.5 between CS1 and CS2 (Table 25). Again this is an impressive improvement given than training on children's participation was not rolled out in Lagos, and suggests a positive spillover from the other aspects of community training and mentoring.

Box 10. Logframe standard for SBMC children's inclusiveness

The school must meet at least three of the four criteria listed below in order to meet the SBMC's children's inclusiveness standard for the current school year:

1)   At least one child attended two or more SBMC meetings (written evidence);

2)   A child member of SBMC raised at least one issue at SBMC meetings (written evidence or oral evidence from child member of SBMC);

3)   At least one issue raised by a child member at an SBMC meeting led to action (written, physical or oral evidence from child member of SBMC); and

4)   At least one SBMC children's committee meeting took place and the committee has a trained facilitator.[3]

Table 25. Lagos: SBMC children's inclusiveness in CS1 and CS2

	CS1	CS2	
(1) Child attended 2+ meetings (%)	20.3	43.2	+
(2) Child raised an issue (%)	20.8	40.1	+
(3) Issue raised by child led to action (%)	14.9	10.4	
(4) Children's committee met and has a trained facilitator (%)	6.3	50.1	+
Number of criteria met	0.5	1.5	+
Meets standard (3/4 criteria) (%)	7.6	14.1	

Note: Schools that did not have SBMCs at all in CS1 are excluded from the analysis; + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; $p < .05$).

Looking at children's inclusiveness in CS2, there is little significant difference in the results for schools when divided by the year that they entered the ESSPIN programme (Table 26). SBMCs in schools which started ESSPIN in 2009/10 were more likely to have taken action on an issue raised by a child than schools which entered in 2012/13. The proportion of schools meeting the standard was higher among schools which had benefited for longer, but the difference was not significant. The difference in differences analysis suggests that while there was an overall improvement in SBMC children's inclusiveness between 2012 and 2014, schools which had received less ESSPIN interventions actually improved the children's inclusiveness of their SBMCs more, or faster, than schools with more intervention (Table 27). The regression method finds the same results and is shown in Annex D. It could be that the schools which started the ESSPIN programme most recently improved the fastest because they were starting from a lower base and had further to 'catch up'.

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[3] In CS1 this criterion required written evidence in the form of minutes of at least one children's committee meeting held in the past school year. This requirement was dropped for CS2 as it was considered unlikely that children's committees would keep good minutes, and that a failure to keep minutes does not mean the committee is not functioning.

Table 26. Lagos: SBMC children's inclusiveness in CS2, by the start year of ESSPIN intervention

	(i) 2012/13		(ii) 2011/12		(iii) 2009/10	
(1) Child attended 2+ meetings (%)	44.2		42.4		42.3	
(2) Child raised an issue (%)	33.6		45.9		39.7	
(3) Issue raised by child led to action (%)	8.4		8.9		26.1	+
(4) Children's committee met and has a trained facilitator (%)	49.1		49.8		56.5	
Number of criteria met	1.4		1.5		1.6	
Meets standard (3/4 criteria) (%)	6.5		19.6		19	

Note: + indicates a significant positive difference between each group and the 2012/13-entry schools.

Table 27. Lagos: SBMC children's inclusiveness difference in differences (comparison of means)

Number of criteria fulfilled (out of 4)	(i) Less-ESSPIN	(ii) More-ESSPIN
CS1	0.1	0.8
CS2	1.4	1.5
Difference	1.3	0.7*

Note: Schools that did not have SBMCs at all in CS1 are excluded from the analysis; * indicates a significantly different difference than that in less-ESSPIN schools (p < .05).

Overall, Lagos State saw an improvement in the functionality of its SBMCs, and in the level of participation of women and children, between 2012 and 2014.

3.6   School quality

Overall school quality is measured as a combination of the standards on teacher competence, headteacher effectiveness, school development planning, and SBMC functionality. A high-quality school is defined as one that meets the teacher competence standard and at least two of the other standards (Box 11).

Comparison of school quality between CS1 and CS2 suggests there has been a substantial increase in the proportion of Lagos's schools that meet the overall school quality standard. The number meeting three or four of the criteria increased from 7% to 36% (Table 28). We also use a 'quality score' indicator which is an average of the continuous indicators developed in the previous sections for teacher competence, headteacher effectiveness, school development planning, and SBMC functionality. There was a significant increase in this quality score, from 40% in CS1 to 64% in CS2.

Box 11. Logframe standard for school quality

The school must meet at least three of the four output standards listed below in order to meet the school quality outcome standard, with teacher competence having to be one of those three:

1) Teacher competence standard (more than 50% of sampled teachers are competent);

2) Headteacher effectiveness standard;

3) School development planning effectiveness standard; and

4) SBMC functionality standard.

As the teacher competence standard has changed between CS1 and CS2 – with teachers required to score a minimum of 50% in both English and mathematics tests to pass the competence standards – we report both 'CS1' and stricter 'CS2' versions of the overall quality standard.

Table 28. Lagos: School quality in CS1 and CS2

	CS1	CS2	
Meets three or four standards (CS1 version)	7.4	36.1	+
Quality score (CS1 version)	39.8	63.7	+

Note: + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; p < .05).

Within CS2, the results show that schools which had been benefiting from ESSPIN interventions for longer had higher levels of quality (Table 29). They were more likely to have met the school quality standard, with 66% of the 2009/10 entry schools meeting the CS1 standard compared with 35% of the most recent beneficiary schools. The earliest entry schools also had a higher quality score than schools which entered ESSPIN in later years.

Table 29. Lagos: School quality in CS2, by the start year of ESSPIN intervention

	(i) 2012/13	(ii) 2011/12	(iii) 2009/10	
Meets three or four standards (CS1 version)	34.8	31.8	65.7	+
Meets three or four standards (CS2 version)	28.5	28.6	49.9	
Quality score (CS1 version)	61.9	64.3	69.4	+
Quality score (CS2 version)	61	64.1	69	+

Note: The CS2 version of the quality score and school quality standard reflect the 'strict' version of the teacher competence standard, where teachers are required to pass literacy and numeracy tests as well as fulfilling other criteria.

The difference in differences of mean school quality score finds that schools which had entered the ESSPIN roll-out more recently and so had fewer years of intervention in fact improved more or faster than those which had been in the programme for more years (Table 30). While this is not the expected result, it could reflect the fact that the later-entry schools were at a lower level of quality in 2012 and so had further to catch up. This can be seen clearly in Figure 4, in which schools with less ESSPIN are seen to be catching up with those schools which benefited from more ESSPIN. Difference in differences using regression on the quality score finds similar results – shown in Annex D.

Table 30. Lagos: School quality difference in differences (comparison of means)

School quality score	(1) Less-ESSPIN	(2) More-ESSPIN
CS1	29.4	46.6
CS2	61.9	65.1
Difference	32.5	18.5*

Note: * indicates a significantly different difference than that in less-ESSPIN schools (p < .05).

Figure 4. Lagos: School quality in 2012 and 2014, in schools with less and more ESSPIN
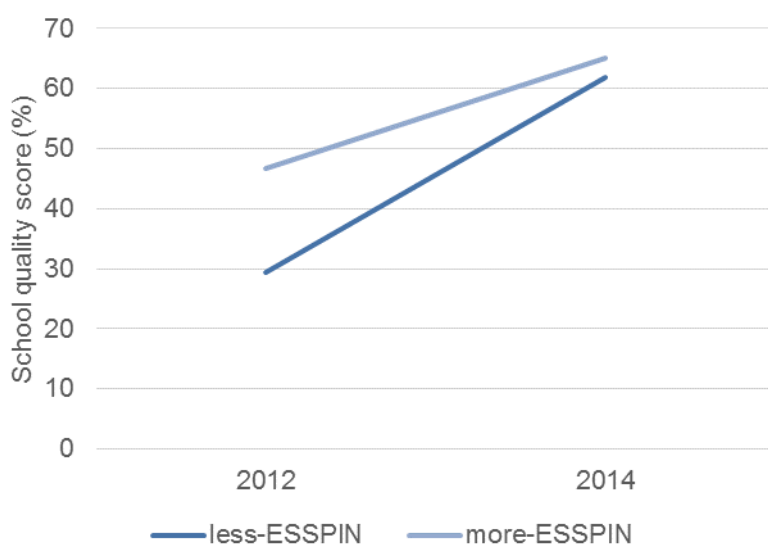
3.7   Pupil learning achievement in English literacy and numeracy

The learning achievement indicators are included as indicators of the impact of the ESSPIN programme. Pupils were tested in grades 2 and 4, in literacy and numeracy. This section begins by following the same analysis conducted for other indicators: looking at the change in the state average between CS1 and CS2, the difference between more-ESSPIN and less-ESSPIN schools in 2014, and the change in results between 2012 and 2014 for pupils in schools expected to improve more in this time compared with those expected to improve less. It then moves on to a more detailed look at the breakdown of pupil results. Here we look at how pupil scores were distributed in the 2014 tests, split between more-ESSPIN and less-ESSPIN schools. We also look at the average test scores on sub-scales of the tests, such as grasp-of-number concepts or addition and subtraction, and how this varies over time for the state average and for pupils from different types of schools.

3.7.1   Main analysis

Between 2012 and 2014 there was an improvement in the test scores in Lagos's schools in all tests, and significantly so in grade 2 literacy (Table 31). The average test scores range from 50% in grade 4 numeracy to 69% in grade 2 literacy. The logframe indicators, although based on a narrow subset of test items, give an indication of the proportion of students with the ability to read and answer numeracy questions at the appropriate level for their grade. There was an improvement in the proportion of pupils meeting the grade 2 numeracy level, from 15% to 30%. The logframe indicator results are low for grade 4 numeracy and literacy, at less than 10% of pupils meeting the expected level.

Table 31. Lagos: Test scores and proportion of children reaching logframe indicator in CS1 and CS2

	Test	CS1	CS2	
Test score (%)	L2	60.4	69.1	+
	L4	62.5	64.3	
	N2	61.4	63.9	
	N4	47.6	50.3	
Logframe indicator (%)	L2	17.5	14.5	
	L4	7.1	7.6	
	N2	14.9	29.6	+
	N4	10.2	9.9	

Note: + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; p < .05).

Focusing on the CS2 data, pupils in schools that had benefited from more years in the ESSPIN programme had similar test scores to pupils in other schools (Table 32). There was also no difference found between the schools in terms of meeting the logframe indicators. The similarity in average test scores can be seen visually in Figure 5.

Table 32. Lagos: Test scores and proportion of children reaching logframe indicator in CS2, by the start year of ESSPIN intervention

	Test	(i) 2012/13	(ii) 2011/12	(iii) 2009/10	
Test score (%)	L2	67.1	70.3	69.9	
	L4	63.2	66	60.9	
	N2	61.4	65.9	62.9	
	N4	49.3	50.7	51.2	
Logframe indicator (%)	L2	17.3	11.2	19.2	
	L4	9.2	7.3	4.5	
	N2	29.1	31.2	24.9	
	N4	10.3	9.3	11.4	

Note: + indicates a significant positive difference between each group and the 2012/13-entry schools.

Figure 5. Lagos: Test scores by ESSPIN intervention group
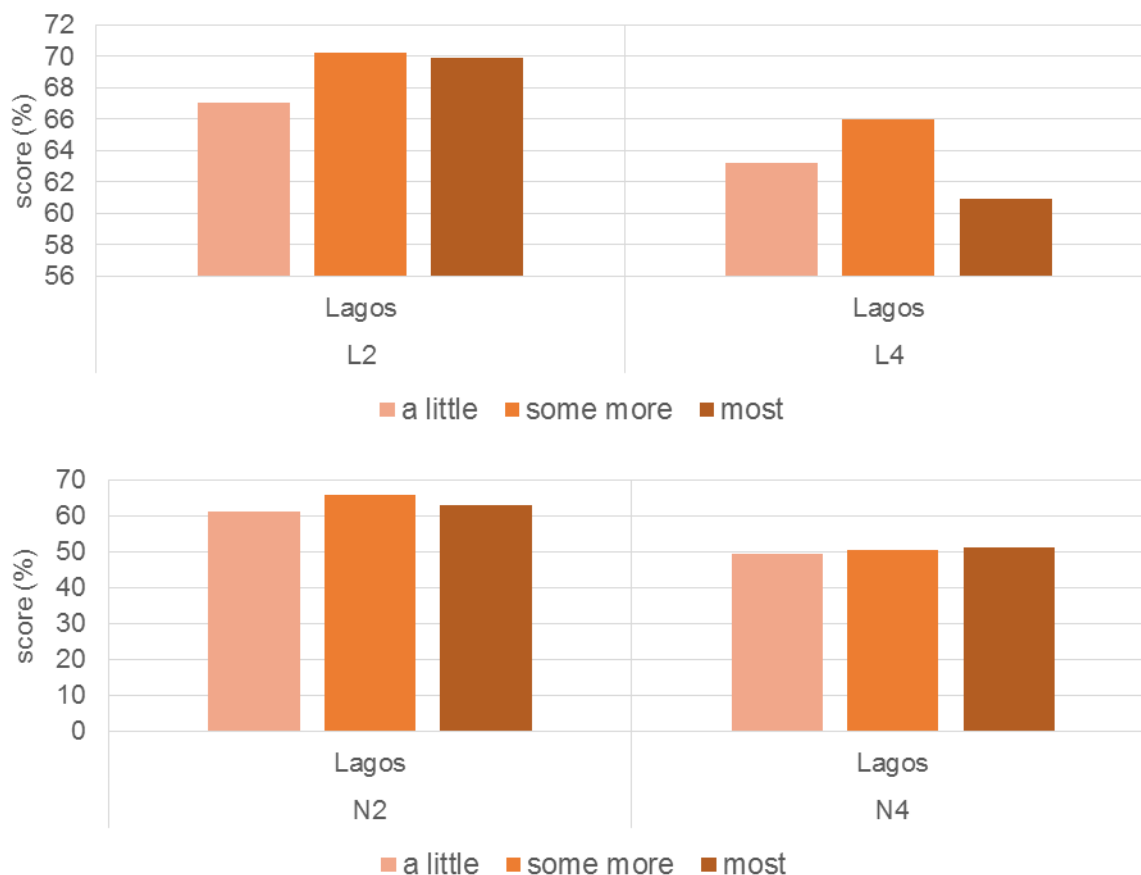
Turning to the question whether the level of ESSPIN activities had an impact on change in pupil test scores between 2012 and 2014, we find there was no significant impact on the rate of change. Generally, pupils' test scores increased between CS1 and CS2 in all types of schools, as seen by the positive differences in the comparison of means (Table 33). Looking at the visual change in average test scores in Figure 6, we can see that all schools improved and that possibly the less-ESSPIN schools (those which joined more recently) improved more. However, the differences in means are not significant. In other words, test scores in each group of schools improved by about the same amount on average.

Table 33. Lagos: Pupil test score difference in differences (comparison of means)

Pupil test score		(i) Less-ESSPIN	(ii) More-ESSPIN
L2	CS1	57	62.4
	CS2	67.1	70.2
	Difference	10.1	7.8
L4	CS1	58.2	64.8
	CS2	63.2	64.9
	Difference	5	0.2
N2	CS1	55.9	64.5
	CS2	61.4	65.3
	Difference	5.5	0.7
N4	CS1	48	47.3
	CS2	49.3	50.8
	Difference	1.2	3.5

Note: * indicates a significantly different difference than that in less-ESSPIN schools (p < .05).

Figure 6. Lagos: Pupil test scores in schools with more and less ESSPIN, in 2012 and 2014
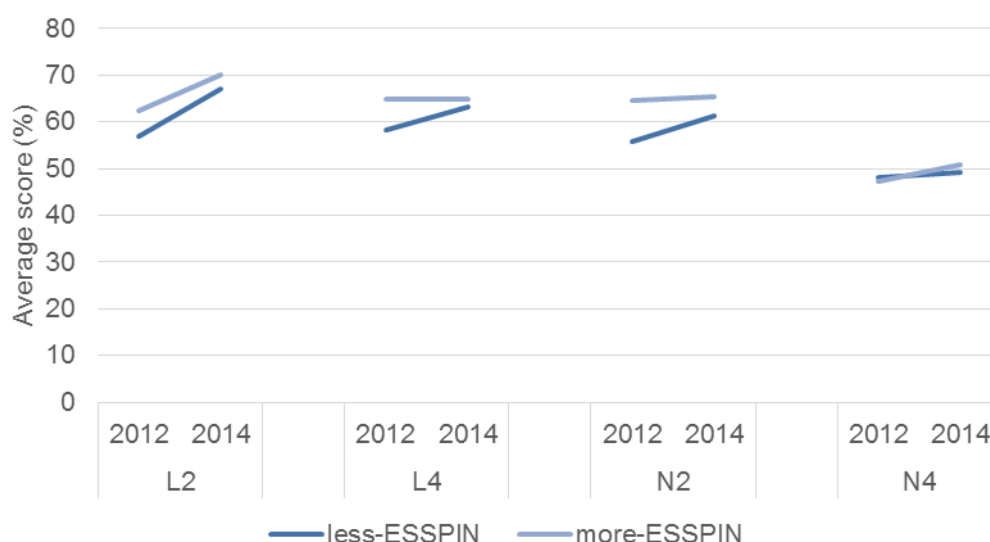
3.7.2 Distribution of test scores and sub-scale scores

We have seen above that there were no significant differences in average scores in Lagos. In fact the breakdown of results by four bands (0–24%, 25–49%, 50–74%, and 75–100%) suggests that while there may be different distributions of pupils in the phases of schools, the results are not sufficiently consistent across the four tests to say what this might be (Figure 7). In all four tests, and in the 2009/10 entry and later-entry schools, a very low proportion of pupils scored test results in the lowest band (0–24%). However, slightly more pupils from the 2009/10 entry schools scored these low results than pupils from schools which benefited for fewer years, when we might have expected the schools which had benefited for longer to perform better. A substantial number of pupils scored in the highest band (75–100%), particularly in grades 2 and 4 literacy where more than 40% fell into this band. Sometimes the 2009/10 schools did better in this top band (grade 2 literacy, grade 4 numeracy), but sometimes later-entry schools did better (grade 4 literacy, grade 2 numeracy).

Figure 7. Lagos: Distribution of pupil test scores in 2014
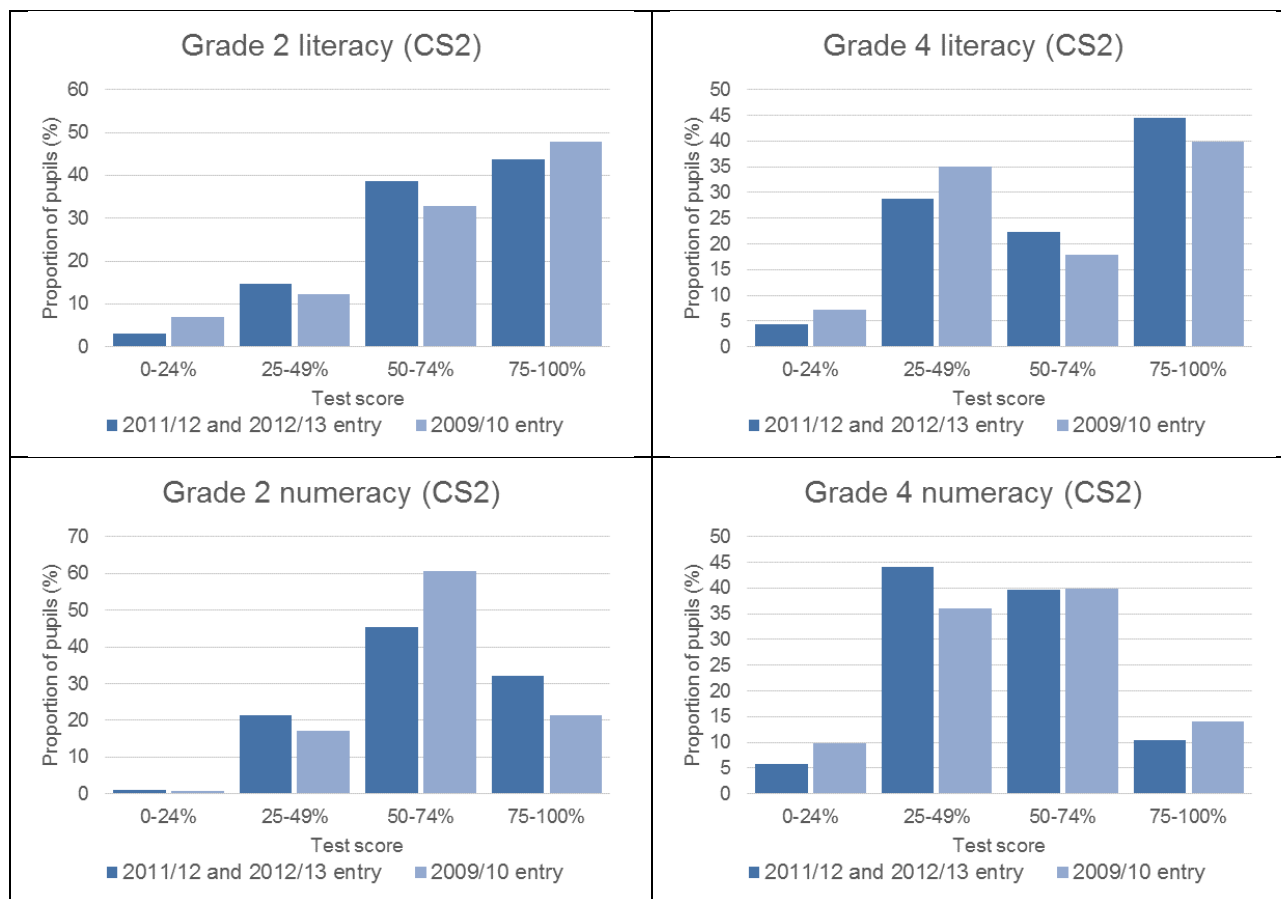
The average pupil test scores in Lagos have increased between CS1 and CS2 in many of the sub-scale areas of the tests (Figure 8). For example, the results in grade 2 literacy increased in writing, grade 1 level items and grade 2 level items. There were also some drops, such as the scores in grade 3 and 4 level numeracy items taken by grade 4 pupils.

Figure 8. Lagos: Average scores in test sub-scales, CS1 and CS2
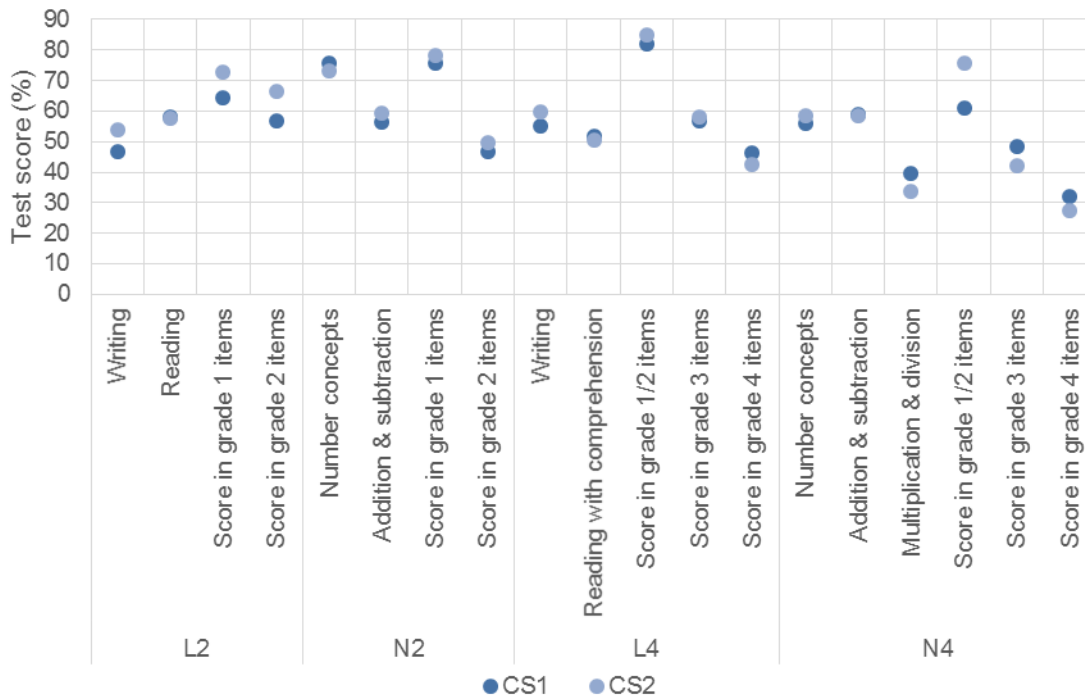
Scores across the sub-scale tests in 2014 were generally similar for pupils from schools which had received more or less ESSPIN support (Figure 9). Pupils from schools which benefited from more ESSPIN were slightly better at number concepts and addition and subtraction in grade 4, and at reading in grade 2. However, pupils from schools with less ESSPIN were better at all the literacy sub-scales in grade 4.

Figure 9. Lagos: Average scores in test sub-scales in CS2, by level of ESSPIN
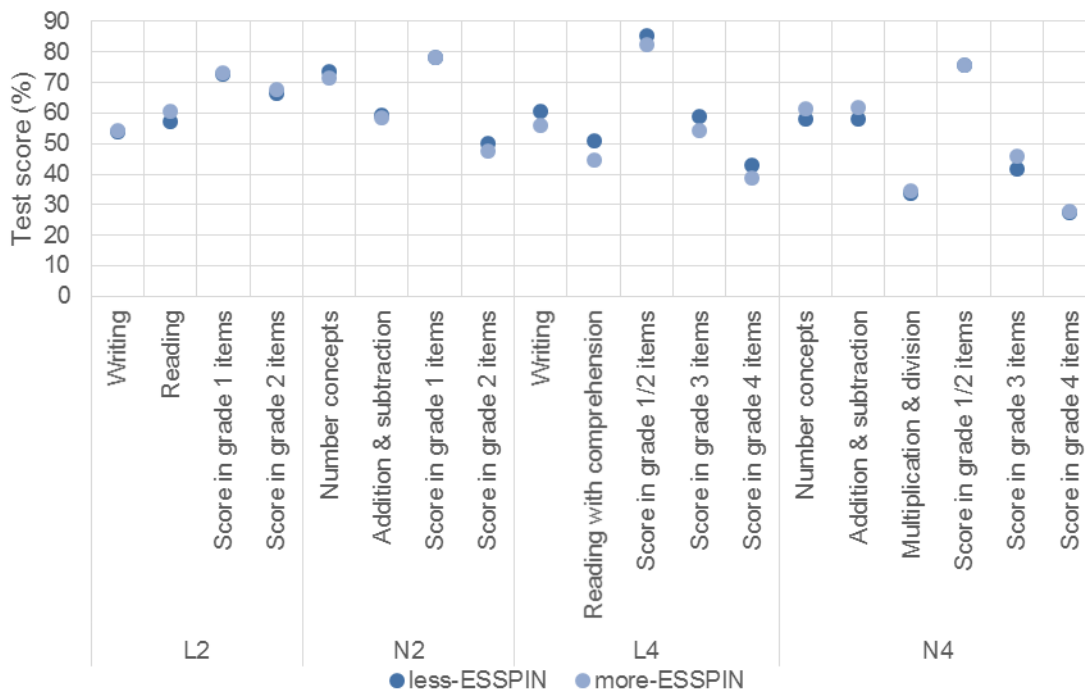
4 Conclusion and implications of survey findings for Lagos's ESSPIN programme

This report has presented the results from the second Composite Survey in Lagos State in 2014, looking at indicators of teachers, headteachers, school development planning, inclusiveness, SBMCs, overall school quality and pupils' learning outcomes. Key findings include:

- Since 2012, there have been large improvements in Lagos in headteacher effectiveness, school development planning, inclusiveness, SBMC functioning and action by SBMCs on children's exclusion, quality, and in the literacy in English of children in grade 2. However, teacher competence and children's test results in grade 4 literacy, grade 2 numeracy, and grade 4 numeracy have not improved significantly.
- Teacher competence, headteacher effectiveness, inclusiveness, SBMC functionality, and overall school quality are all better in schools that have had ESSPIN intervention since 2009/10 than in those that joined the programme more recently.
- For school development planning and overall school quality, the pace of improvement has been faster in schools where ESSPIN intervention started in 2012/13. Instead of the schools with most intervention seeing the largest improvements, it seems that the new entrants to the intervention have been catching up rapidly from a relatively low baseline. For other indicators, there was no significant difference in the pace of change between different groups of schools.

The fact that the fastest improvements between 2012 and 2014 were not found in the schools receiving the most intervention is somewhat surprising, but may be explained by some form of diminishing returns to intervention. This would mean that low performing schools improve rapidly up a steep curve and then the speed of improvement starts to reduce (the curve flattens). The surveys suggest that in Lagos the schools where less improvement was expected (because they entered later) were behind the earlier phase schools in 2012. For example, the school quality score in 2012 was 29% in the less-ESSPIN schools and 47% in the more-ESSPIN schools. With this wide gap, the schools which joined later had further to catch up and so would benefit from this steeper, or faster, improvement in the most recent year. It may also be unsurprising that ESSPIN schools could not keep pace, having made the initial improvements earlier in the programme. This suggests that ESSPIN can have rapid effects on a number of school-level outcomes, although this finding may be particular to the Lagos context, where school and teacher capacity was already higher than in some of the other states where ESSPIN works.

Despite the sometimes dramatic improvements in school functioning, improvements in pupil test results were relatively modest and only statistically significant in the case of grade 2 literacy, and teacher competence also did not improve for the state as a whole. Moreover, pupil test results in schools that have had ESSPIN intervention for longest were not significantly higher than those which recently joined the intervention. The most positive results for teachers were among those who received training directly from ESSPIN (as opposed to just being in an ESSPIN school without individually receiving training) and among new entrants to the programme. Although further investigation is required, it may be that a lack of improvement among the 25% of teachers not yet selected for direct training is part of the reason for the limited changes in children's learning outcomes. An additional reason may be large increases in the PTR in some schools, making it difficult for teachers to apply newly learned methods and deliver better learning outcomes.

The relatively modest gains in children's learning outcomes notwithstanding, it is interesting to consider why ESSPIN appears to have been particularly successful in Lagos compared to other states. Although a detailed investigation is beyond the scope of this report, there are several possible explanations. First, the programme has been consistent in delivering interventions

throughout the five years from 2009/10 to 2013/14; it has maintained a presence in all the schools where it initially intervened, rather than moving to a different set of schools; and it has been rolled out rapidly to include all schools in the state. Second, although we do not have data on their subject knowledge at the beginning of the programme, teachers in Lagos appear to have relatively strong English literacy and numeracy. Third, increases in enrolment have been relatively modest compared to some states, although there has still been a substantial increase in the PTR. Fourth, although not immune to political violence, Lagos has not suffered the more severe outbreaks of violent conflict that have hampered efforts to improve schools in other states. It remains for further research to examine the relative strength of these explanations.

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Annex A   School characteristics

The table below sets out summary statistics for Lagos's schools, split by categories according to the level of Output stream 3 intervention (Medium or Maximum). The data comes from the annual school census from 2009/10 and 2013/14.

Lagos's schools by level of ESSPIN intervention	Medium (1)	Medium (2)	Maximum	
	2b	2a	1	
Distance from LGA headquarters	8.7	6.5	4.5	
Age of the school in 2014	45.4	42.9	46.2	
Urban (%)	71.3	82.3	90.6	+
Nomadic (%)	0	0.2	0	
Islamic (%)	0	0	0	
Double shift (%)	0	0.2	0	
Had parent-teacher association in 2009/10 (%)	84.2	90.2	92.7	
Had SBMC in 2009/10 (%)	55.1	61.9	64.2	
PTR in 2009/10	28.7	29.2	31.6	
PTR in 2013/14	38.7	36.6	42.1	+
Change in PTR (%)	37	31.9	40.8	
Number of classrooms in 2009/10	10.1	11.3	12.4	+
Number of teachers in 2009/10	12.6	14.5	16.6	+
Primary enrolment in 2009/10	364.4	399	495.8	+
Change in enrolment 2009/10–2013/14 (%)	13.6	3.4	4.4	
% of teachers with academic diploma/degree	40.7	40.9	34.7	
% of teachers with PGDE, BEd or Med	32.2	33.6	29.7	
% of teachers with NCE, Grade II or equivalent	66.8	64.9	69.4	
School has a power source (grid/other)	38.9	45.3	51	
% of classrooms with enough seating	40.8	40.5	35.2	
% of classrooms with a good blackboard	56.6	61.2	70.7	+
% of classrooms in good condition/minor repairs	50.9	54.5	56.9	
School has at least one toilet (%)	40.3	54.1	52.6	
Number of schools	404	499	97	

Source: Annual School Census, 2009/10 and 2013/14; +/- indicates a significant positive/negative coefficient in a linear or logit regression of years of full ESSPIN intervention on the variable of interest.

Annex B   ESSPIN Output stream 3 interventions

The table below shows the ESSPIN Output stream 3 interventions delivered to date in Lagos. All of the state's schools received at least two years of intervention. The three combinations of intervention have been classified according to the year in which ESSPIN intervention started (2009/10, 2011/12, or 2012/13), and for simplicity, have also been categorised as 'more-ESSPIN' (the 2011/12 and 2009/10 starters) versus 'less-ESSPIN' (the 2012/13 starters).

Category for analysis	Number of schools	2009/10			2010/11			2011/12				2012/13			2013/14			
		L	T	SV	L	T	SV	L	T	SV		L	T	SV	L	T	SV	
2012/13 ('less-ESSPIN')	501										CS 1	6	3	9	6	3	9	CS 2
2011/12 ('more-ESSPIN')	500							6	3	9		6	3	9	3		9	
2009/10 ('more-ESSPIN')	100	5*	5*	9*	10*	5*	9*	6	3	9		6	3	9	3		9	

Note: L = days of leadership training; T = days of teaching training; SV = school visits; * = pilot.

Annex C   ESSPIN Output stream 4 interventions

The table below shows the days of Output stream 4 intervention in Lagos under different headings: SBMC training; women and children participation training; and mentoring visits.

Level of Output stream 3 intervention	2010/11			2011/12				2012/13			2013/14				De facto phase
	S	P	M	S	P	M		S	P	M	S	P	M		
Medium											7		4		post-CS1
Maximum / Medium				7		4		r		4	7		4		pre-CS1

Note: S = SBMC training; P = women and children participation training; M = mentoring visits; r = one-day refresher; mentoring visits were by civil society-government partnership teams, except those marked with an asterisk, which were by social mobilisation officers.Difference in differences analysis using regression

Annex D   Difference in differences analysis using regression

This annex presents the results of regression analysis of difference in differences for the indicators above, to compare change over time between subgroups.

The analysis in Chapter 3 above presents the difference in differences of indicator means for sub-categories of groups.

Sometimes we want to use all of the available information and compare schools which have had more or less ESSPIN intervention – a continuous scale – rather than dividing them into some or none. In this case we can use regression analysis – a statistical process for estimating relationships among variables. We model the outcome indicator as depending on time (the round of the survey, CS2 versus CS1), the intensity of intervention, and a treatment effect, which is the interaction between time and intensity of intervention. The treatment effect tells us if an increase in the level of intervention increased the speed at which the outcome improved. Regression results are reported as a series of 'coefficients' – numbers representing the strength of the relationship with the outcome of interest.

Coefficient	Meaning of coefficient if positive and significant
Time (CS2 v. CS1)	the outcome improved over time
Intervention	the higher the level of intervention, the more effective (regardless of change over time)
Treatment	the higher the level of intervention, the more or faster the outcome improved over time – this is our key indicator of success

Teacher competence

Here we use regression analysis to examine whether teachers who received more training from ESSPIN improved more, or faster, between 2012 and 2014 (Table 34). We model the outcome indicator (competence score) as depending upon time (the round of the survey) and the intensity of intervention. We try two different ways of measuring the intensity of intervention. The first uses the number of years of school improvement that the school has received. The second uses the number of days of training that the teacher has individually received. In each case we also use an alternative variant that adjusts for the length of time a teacher has been in his or her present school. A teacher who joined the school only in 2012, for example, cannot have benefited from ESSPIN training delivered in 2010 or 2011, so using this information allows us to estimate more accurately how much training the teacher has received.

The interaction effect between intervention and time, labelled 'treatment', if positive and significant, would provide evidence that schools with more ESSPIN intervention improved more rapidly between 2012 and 2014.

Looking first at the non-adjusted results for the school improvement intervention, time and intervention effects are positive and significant, indicating both an improvement over time across the schools as a whole, and better outcomes in schools receiving more ESSPIN intervention than in those receiving less ESSPIN intervention. However, the treatment effect is negative and significant, suggesting that progress over time was slower in schools with more intervention, or equivalently, that schools that joined the programme more recently had caught up by improving more rapidly.

The results when individual training is the intervention variable are less conclusive. The treatment effect, which tells us if teachers who received more training over the period improved faster, is

positive, and this is significant when the training variable is adjusted for how long the teacher had been in post. From this we can infer that the ESSPIN training did have the intended effect on teachers' competence.

Taken as a whole, the regression results suggest that, as a whole, teachers in schools that are recent joiners to the ESSPIN programme have caught up by improving more rapidly between 2012 and 2014; but, at the same time, teachers who individually received more training have improved more rapidly than those who received less (or no) training.

Table 34. Lagos: Teacher competence difference in differences (regression)

Regression on competence scores (CS1 version)		Non-adjusted				Adjusted			
Intervention variable		school improvement		training		school improvement		training	
Time (CS2 v. CS1)	coefficient	12.7	*	-0.6		14.4	*	-1.2	
	SE	3.7		3.2		3.4		2.4	
Intervention	coefficient	3.1	*	2.7		4	*	-0.6	
	SE	0.8		2.1		0.7		0	
Treatment	coefficient	-3.2	*	0.4		-4.3	*	2.3	*
	SE	1		2.2		0.9		1.1	
	N	199		199		196		196	

Note: * indicates a significant coefficient (p < .05); adjusted results are adjusted for the length of time a teacher has been in his/her current school – and therefore whether he/she would have benefited from the full ESSPIN training package.

Headteacher effectiveness

The regression results suggest there was no significant treatment effect on headteacher effectiveness whether the school benefited from more years of ESSPIN or the headteacher benefited from more training (Table 35). This is likely because the definition of receiving more ESSPIN intervention is quite weak.

Table 35. Lagos: Headteacher effectiveness difference in differences (regression)

Regression on number of criteria met (out of 7)		Intervention variable				
		School improvement	Training		Training (adjusted for start date)	
Time (CS2 v. CS1)	coefficient	1.26	2.47	*	2.14	*
	SE	0.75	0.38		0.21	
Intervention	coefficient	0.19	0.03		0.03	
	SE	0.26	0.02		0.02	
Treatment	coefficient	0.31	-0.08		-0.06	
	SE	0.42	0.05		0.03	
	N	180	180		177	

Note: * indicates a significant coefficient (p < .05).

School development planning

Regression analysis on school development planning finds a positive time effect and intervention effects, as would be expected (Table 36). However, the treatment effect is negative and significant,

suggesting that schools which received more ESSPIN intervention could not improve at the same pace as schools with less intervention. It may be that schools which entered the programme later had more 'catching up' to do and so were able to improve faster than schools which had entered the programme earlier.

Table 36. Lagos: SDP effectiveness difference in differences (regression)

Regression on SDP effectiveness criteria fulfilled (out of 5)			
Time (CS2 v. CS1)	coefficient	4.26	*
	SE	0.52	
Intervention	coefficient	1.86	*
	SE	0.23	
Treatment	coefficient	-1.88	*
	SE	0.32	
	N	203	

Note: * indicates a significant coefficient (p < .05).

School inclusiveness

A regression on the inclusiveness score has been used for difference in difference analysis of schools in Lagos, depending on the level of ESSPIN intervention (Table 37). The significant intervention coefficient shows that schools with more ESSPIN support were significantly more inclusive in both 2012 and 2014. However, there is no evidence of a treatment effect, so schools with more support did not improve any faster in the two years than those with less support.

Table 37. Lagos: School inclusiveness difference in differences (regression)

Regression on inclusiveness score			
Time (CS2 v. CS1)	coefficient	5.7	
	SE	3.82	
Intervention	coefficient	5.35	*
	SE	1.9	
Treatment	coefficient	-2.39	
	SE	2.33	
	N	201	

Note: * indicates a significant coefficient (p < .05).

SBMC functionality and inclusiveness

A regression to assess the impact of ESSPIN support on the change in SBMC functionality finds no significant treatment effect (Table 38). This suggests that the change in functionality was the same regardless of the number of years of support the school had from ESSPIN.

Table 38. Lagos: SBMC functionality difference in differences (regression)

Regression on number of SBMC functionality criteria met			
Time (CS2 v. CS1)	coefficient	5.56	*
	SE	1.04	
Intervention	coefficient	1.89	*
	SE	0.46	
Treatment	coefficient	-1.18	
	SE	0.62	
	N	203	

Note: * indicates a significant coefficient (p < .05).

The regression on women's inclusiveness of SBMCs also finds that there was no significant treatment effect, so more ESSPIN support did not lead to any faster improvement in women's inclusiveness between 2012 and 2014 (Table 39).

Table 39. Lagos: SBMC women's inclusiveness difference in differences (regression)

Regression on number of women's inclusiveness criteria met			
Time (CS2 v. CS1)	coefficient	2.12	*
	SE	0.61	
Intervention	coefficient	0.86	*
	SE	0.26	
Treatment	coefficient	-0.41	
	SE	0.36	
	N	194	

Note: * indicates a significant coefficient (p < .05); schools that did not have SBMCs at all in CS1 are excluded from the analysis.

A regression analysis of difference in differences in SBMC children's inclusiveness finds that all schools improved between 2012 and 2014, according to the positive and significant time coefficient (Table 40). However, the treatment coefficient is negative and significant, suggesting that the SBMCs with less support became more inclusive of children over the period, catching up with the SBMCs who had received support for longer.

Table 40. Lagos: Difference in differences in SBMC children's inclusiveness (regression)

Regression on number of children's inclusiveness criteria met			
Time (CS2 v. CS1)	coefficient	1.77	*
	SE	0.37	
Intervention	coefficient	0.68	*
	SE	0.18	
Treatment	coefficient	-0.51	*
	SE	0.24	
	N	203	

Note: * indicates a significant coefficient (p < .05); schools that did not have SBMCs at all in CS1 are excluded from the analysis.

School quality

The regression method for difference in differences in school quality finds that all schools improved their quality score over time, and the ESSPIN schools were of higher quality, as would be expected (Table 41). However, the significant negative treatment coefficient suggests that schools which were expected to have improved more due to ESSPIN actually improved at a slower rate than other schools. It is possible that schools which benefited from ESSPIN only recently had more to catch up and so underwent a more rapid improvement.

Table 41. Lagos: School quality difference in differences (regression with continuous intervention variable)

Regression on school quality score			
Time (CS2 v. CS1)	coefficient	46.54	*
	SE	6.42	
Intervention	coefficient	17.25	*
	SE	2.95	
Treatment	coefficient	-14.01	*
	SE	3.68	
	N	168	

Note: * indicates a significant coefficient (p < .05).

Pupil learning

In terms of pupil learning achievement, the regression analysis finds that all the treatment effects were negative, but none significant across any of the four tests (Table 42). This means that we cannot say that pupil test scores improved any faster (or slower) between 2012 and 2014 in schools which benefited from more ESSPIN support. All of the tests had a positive time coefficient, and significantly so in grade 2 literacy and grade 4 numeracy, showing that scores generally improved over time.

Table 42. Lagos: Pupil test score difference in differences (regression)

Regression on pupil test score		L2		L4		N2		N4	
Time (CS2 v. CS1)	coefficient	12.62	*	2.89		6.16		6.6	*
	SE	5.29		3.7		3.72		2.54	
Intervention	coefficient	3.1		1.77		3.73	*	0.32	
	SE	1.8		1		1.12		0.53	
Treatment	coefficient	-1.17		-0.5		-1.63		-0.36	
	SE	1.92		1		1.33		0.67	
	N	207		206		206		206	

Note: * indicates a significant coefficient (p < .05).